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Sharon G. Neuman
University of Alberta

Editorial

The Negative Consequences of the Self-Esteem Movement

Editor's Note

In March of this year it was announced that the December 1992 issue of AJER would be devoted to educational research in Quebec. Unfortunately, due to some unforeseen delays with translation, this special issue has been postponed until March 1993. However, please expect a very interesting collection of papers in your next issue of the journal.

The following commentary was submitted by Sharon G. Neuman, a high school English teacher and a graduate student in the area of measurement and evaluation in the Department of Educational Psychology at the University of Alberta.

RHS

The self-esteem movement, the attempt in public education to teach or enhance self-esteem at an institutional level, has become a motherhood issue. To question the value of the self-esteem movement is to ally yourself with educational critics and conservatives, which may be why so few questions have been raised from within the educational establishment. Even educators who do have questions may be reluctant to raise them because of their fear of being linked with people they don't agree with in most other ways. However, some questions do need to be asked.

One issue that causes credibility problems for the self-esteem movement is that it appears to be one of the bases for the political correctness movement, whose educational manifestation is censorship. This censorship in the name of never offending anyone and trying to make everyone "feel good" is both intellectually dishonest and educationally unsound. When you reduce everything to bland pap, you are missing great opportunities for discussion and understanding. For example, teaching *The Merchant of Venice* in its historical context provides opportunities for understanding the root causes of anti-semitism and exposing it as the false doctrine it is. Pretending that negative portrayals don't exist doesn't make them go away. The mistake is in stigmatizing words and ideas when we should be dealing with underlying attitudes. One way of doing this is through thorough and open discussion. Certainly our courses of studies should reflect more cultural and ethnic diversity than they

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have in the past—there is more to literature than dead white males—but they should be inclusive and additive, not exclusive and subtractive.

One of the major questions of the self-esteem movement is (or should be) the source of genuine self-esteem. (I am assuming that there is such a thing, although it hasn't been well defined.) Some educators believe that students must have a positive self-concept before effective learning can take place. But how do students acquire this positive self-concept? Many proponents of the self-esteem movement seem to believe that it is something that can be doled out on the first day of school along with pencils and name tags. Others believe that self-esteem must follow, not precede, real achievement. It is this latter position that makes sense. Self-esteem is important, but no number of self-esteem programs can replace the genuine satisfaction of a job well done. We vastly underestimate our students' understanding and abilities if we think they are deceived by being told how great they are without any kind of evidence. We underestimate their resilience when we attempt to protect them from any kind of failure. We are doing them a great disservice by lying to them with good intentions. Conveying the message that accomplishment isn't important undermines self-esteem by suggesting to students that they lack ability because not much is expected of them.

Schools and school systems often undermine their good intentions in fostering self-esteem by contradicting their own goals. An example of this is encouraging cooperative, noncompetitive learning and then administering and publishing the results of standardized tests. We give our students a mixed message when we suggest that there is no such thing as failure, that their progress will be judged on their own personal growth, and then publicize test results. We are doing our students a disservice by not giving them a safe experience of failure, after which they could go on and succeed, thereby learning that initial difficulties are not insurmountable. Learning to cope with disappointment is very much part of the educational process. We live in a competitive society with a strong emphasis on winning, and children are competitive, as any teacher who has tried to disguise low, medium, and high ability groups with neutral names will confirm.

I suspect that one of the underlying reasons for the popularity of the self-esteem movement in North America is that on the surface we appear to be a concerned, caring, child-centered society, but in fact we're not. Children are not valued in North American culture as they are in many others. The most direct victims of funding cuts in education, health care, and social services are children, perhaps because they can't vote. When you hear stories about some of the excesses of the self-esteem movement, like the principal who installed full-length mirrors with signs saying, "Smile, you're someone special" in school washrooms, you really wonder whether money wouldn't be more productively spent on teaching staff to help students with difficulties. Teaching is difficult and demanding at best, and in the current educational climate where teachers are required to be so much more than transmitters of knowledge it is easy to see why they might be tempted just to say, "That's good" when it really isn't. Education has often been viewed as a panacea for social problems, and as education is required to do more and more outside its traditional bailiwick, giving children self-esteem and solving all these

problems seems an attractive solution. If only it were that easy. Wave your magic self-esteem wand and everyone will be happy. There will be no troubling questions about why Johnny is both illiterate and innumerate. Self-esteem does come through achievement. A great deal of effort and planning must go into programs that genuinely improve self-esteem. Many educators and parents seem not to have the time or the skills to carry these out. It is much easier to give meaningless praise than it is to take the time to show the child how to do a better job.

The self-esteem movement, if continued in its present form, will weaken our educational system, already considered too weak by many of its critics. It will remove from our students any practice in problem solving, as well the joy of accomplishment. If we continue in the present vein, the social and educational problems that the self-esteem movement purports to cure will only become worse.

Anne L. Cummings

and

Karen Curtis

University of Western Ontario

Social Problem Solving Cognitions and Strategies of Student Teachers

Social problem solving of student teachers was analyzed using a think-aloud methodology. Participants were asked to solve four problems that student teachers typically face (instruction, discipline, supervising teacher, time demands). Students gave solutions to the problems at the beginning, middle, and end of their preservice year. Problem solutions were analyzed for eight different problem solving elements. The individual strategies generated by the student teachers were content analyzed for each problem situation. Results showed that both the type of problem solving cognitive elements and problem solving strategies were influenced by the type of problem being solved. There were also changes in the problem solving elements over time. Implications of these results for teacher education are discussed.

On analysa la résolution des problèmes sociaux des stagiaires en utilisant une méthodologie de réflexion à haute voix. Les participant(e)s ont dû résoudre quatre problèmes typiques que les stagiaires rencontrent tels la pédagogie, la gestion de classe, l'enseignant(e) coopérant(e), l'exigence de temps. Les stagiaires ont solutionnés ces problèmes au début, au milieu et à la fin de leur année dans laquelle ils (elles) complétaient leur dernier stage. Les solutions aux problèmes ont été analysées selon huit critères différents et le contenu de chaque situation problématique a été analysé d'après les stratégies individuelles utilisées par les stagiaires. Les résultats obtenus indiquent que la nature même du problème étant résolue influencent le choix d'éléments cognitifs et les stratégies de résolutions préférées par le stagiaire. Il y eut aussi des modifications à la résolution de problèmes pendant la période de temps étudiée. Les implications que ces résultats apportent à la formation des enseignant(e)s sont discutées.

Educational research has begun to focus increasingly on teacher thinking and problem solving (Cummings, Murray, & Martin, 1989; Kagan, 1988; Peterson, 1988). This focus represents a significant shift away from more behavioral research. As Clark and Lampert (1986) assert, teacher education that is based only on behavioral research often leads to simplified prescriptions for teacher performance (e.g., how to reinforce appropriate student behaviors). In contrast, research on teacher thinking views the thought processes, judgments, and decisions of teachers as having a profound impact on the way teachers teach and students learn in classrooms (Peterson, 1988).

Research on teacher thinking has the potential of contributing greatly to teacher education programs. Flodden and Klinzing (1990) suggest that insight

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Karen Curtis recently completed her MA in school psychology from the Ontario Institute for Studies in Education.

into teachers' thought processes could provide information for both content and methods of teacher education. For example, if teacher educators knew the schemata that teachers employed to help them deal with various teaching situations, it might then be possible to facilitate the development of these schemata in student teachers.

Clark (1988) emphasizes the importance of research on teacher thinking as being inherently suited to the complexity and uncertainty that is intrinsic to the interactive teaching experience. He believes that much of a teacher's energy is directed to predicting problems and reacting to the interruptions and dilemmas that they encounter daily. In fact he reports that teachers are faced with interactive decision situations at approximately two-minute intervals while teaching. If we can better understand this interactive decision making process used by teachers, teacher educators may be better able to help student teachers prepare themselves to think in ways that will allow them to cope with the complexities of the classroom. By viewing teachers as thoughtful, active problem solvers, an external perspective of process-product research (e.g., focusing on what teachers do) is then replaced by an internal perspective of what teachers understand and perceive (Kagan, 1988).

While much research has examined well-defined problem solving in the classroom using math or science problems (e.g., Leinhardt & Smith, 1985; Peterson, 1988), little research has investigated the problem solving of teachers with more ill-defined social problems that arise daily in the classroom. Social or personal problem solving is here defined as the process utilized by people to cope effectively with the problematic situations of everyday life (D'Zurilla & Goldfried, 1971). It is conceptualized as being highly interactive, complex, and intermittent rather than being a linear or stage sequence (Heppner & Krauskopf, 1987).

Several researchers (Berliner, 1986; Peterson & Comeaux, 1987) note that beginning teachers, as opposed to more experienced teachers, tend to be at a disadvantage in problem situations because of their lack of both procedural and declarative knowledge of common teaching practices. They do not yet have a broad repertoire of hypotheses or schemata for responding to the constantly changing classroom environment. Flodden and Klinzing (1990) recommend studying the implicit theories of student teachers to facilitate the development of schemata to achieve a wide range of educational aims. Therefore, the present study will focus on the social problem solving of student teachers.

One difficulty in researching teacher thinking is that thinking cannot be accessed directly. One of the most effective ways of dealing with this problem is to assess thinking and problem solving processes through think-aloud methodology (Clark, 1988; Ericsson & Simon, 1984). This methodology requires teachers to talk out loud while they solve problems, giving researchers a close approximation of the cognitive and metacognitive strategies employed by teachers as they reflect on their own actions and knowledge about a given situation.

The think-aloud methodology has been used by one research team (Magliaro, Wildman, Niles, McLaughlin, & Ferro, 1989; Wildman, Magliaro, Niles, McLaughlin, & Drill, 1988) to identify the specific problems en-

countered by elementary and secondary teachers during their first two years of teaching. These researchers found several primary sources of problems for beginning teachers: students, instruction, classroom organization, school context, self, and parents. Although the Wildman et al. (1988) study focused on beginning teachers, the present study focuses on student teachers. Four of the areas identified by Wildman et al. (1988) were selected for examination in the present study as being representative of the types of ill-defined problems that all student teachers experience: instruction, classroom organization (discipline), context (relationships with colleagues), and self.

The present study was designed to accomplish several goals. The first was to analyze the think-aloud problem solutions of student teachers on four different types of problems to identify the cognitive elements used and to assess whether the students varied their cognitive processing for different types of problems. Eight problem solving elements identified by Cummings et al. (1989) were used for the analyses. One of the weaknesses of this previous study was the use of written problem solutions rather than oral solutions that might permit greater completeness of the thoughts expressed.

The second purpose involved assessing the relationship between different types of problems and the types of problem solving strategies used by student teachers. Previous research (Cummings et al., 1989; Kagan, 1988) has found that, to a large extent, the type of social problem encountered influences the kind of problem solving approach. However, previous studies have not examined the content of the strategies selected by participants. Understanding how different types of problems might elicit different strategies from student teachers could aid teacher education in better preparing students for typical classroom situations. For example, do student teachers use different types of strategies for discipline problems than they do for instruction problems?

Finally, the effect of experience and knowledge on the problem solving processes of the student teachers was examined. This goal was accomplished by assessing students' problem solving processes at the beginning of their student teacher education before they had any experience in the classroom, in the middle of their training after some education in procedural knowledge (practice teaching) and declarative knowledge (university education courses), and toward the end of their teacher preparation year.

One of the weaknesses of previous studies on teacher cognitions using a think-aloud methodology is that sample sizes rarely exceed 10 (Kagan, 1990), making generalizability of results difficult. Two studies that did use larger samples (Stoiber, 1991; Swanson, O'Connor, & Cooney, 1990) only examined solutions for discipline problems. Therefore, the present study attempts to rectify this problem by using a larger sample of 29 student teachers solving four diverse social problems.

Method

Participants

The participants were 29 (22 women and 7 men) volunteer student teachers in a one-year Bachelor of Education program at the University of Western Ontario during the 1988-1989 academic year. All students had a three- or four-year bachelor's degree before entering the Bachelor of Education program. Ages ranged from 23-43 with a mean of 27. Students were preparing to teach

grades 4-12 and had a wide variety of majors (e.g., English, French, history, music, math). The organization of the program included a repeated sequence throughout the year of students taking five weeks of course work at the university followed by three to four weeks of practice teaching in schools. During each practice teaching session students were assigned to one supervisory teacher and taught portions of that teacher's load. The students' placements changed for each practice teaching segment.

Procedure

A research assistant met individually with the volunteer student teachers during the first weeks of the academic year in September. The following instructions were read to each student: "You will be given four different problems. For each one of them, put yourself in the situation and think aloud about how you would resolve the problem to a satisfactory solution. I am interested in your thoughts, feelings, and behaviors. Read the situation out loud and then begin sharing your thoughts about the problem. Do not censor anything." All problem solutions were audiotaped as the student spoke out loud.

The four problem situations included the following: (a) "You have just taught a new concept to the class. The brighter students understand the new concept, while the slower students do not understand it" (instruction); (b) "Two students together have been gradually escalating their disruption of your class presentations over time and have not responded to your requests to be quiet" (discipline); (c) "You are having conflict with your supervising teacher because of differences in style and approach" (context); (d) "You are finding it difficult to balance the demands of school work and the needs of your personal life" (self).

These four problem situations were repeated twice more for each student teacher. The second testing occurred two months later in November after the first practice teaching experience of four weeks. The last testing occurred six months later in March after the second practice teaching session of three weeks. In both cases the research assistant met with the student teachers individually and taped their think-aloud solutions to the same four problems.

All problem solutions were transcribed from the audiotapes. After the transcriptions were completed, the same research assistant listened to the tapes and made any necessary corrections to the typed transcripts. Two raters then divided the problem solutions into scorable units and categorized the units using a manual developed by Cummings et al. (1989). The scoring manual specified procedures for unitizing scorable units of analysis and for assigning these units to categories. A scorable unit is denoted by a complete thought or change of content within a sentence.

Protocols were scored for nine mutually exclusive categories intended to describe the total process of social problem solving. The scoring categories were based on problem solving elements from prominent social problem solving models (D'Zurilla & Goldfried, 1971; Platt & Spivack, 1975). The nine categories were: (a) problem statement (describing the problem or "setting the stage" before taking action); (b) analysis (directly or indirectly assessing the problem); (c) strategy (idea, action, or approach for solving the problem); (d) elaboration (detail about a strategy or the situation); (e) reason (explanation for

a strategy, feeling, or evaluation); (f) evaluation of a strategy or situation (judging the feasibility or desirability of a strategy or situation); (g) evaluation of self (problem solver judges self within the problem situation); (h) feeling (how the problem solver feels about the problem, strategy, or outcome); (i) if-then thinking (assumption about the problem, followed by a possible solution). Because of the low frequency of the category *problem statements* by these students, the first category above was combined with elaboration, yielding eight problem solving elements. The combination of problem statement with elaboration was conceptually sound in that both categories could be seen as descriptive detail about the problem. An example from one student teacher on the discipline problem of the unitizing and coding categories includes the following: "I might move them closer to me (strategy) so I could have more eye contact with them (reason). The only risk in that is possible embarrassment at being in front of their peers (evaluation of strategy)."

A frequency count for each element for each of the four problems was made from the transcribed problem solutions. The frequencies were then totalled for the two conflict problems (discipline, supervising teacher) and the two balancing problems (instruction, time demands). The conflict problems involved solving an interpersonal conflict between the student teacher and other people (students in one problem and supervising teacher in the other). Balancing problems involved two opposing needs or pressures (balancing the needs of the slow versus fast students in the instruction problem, and balancing the needs of work versus home life in the self problem). A second grouping occurred by combining the frequencies for the two classroom problems (discipline, instruction) and the two nonclassroom problems (supervising teacher, time demands). These frequencies were used in subsequent analyses.

Protocols were scored by two raters: one rater had an MEd degree and five years of experience in rating protocols, while the other rater was the same research assistant previously mentioned, a graduate student in an MEd program. Raters received approximately 20 hours of training and practice on unitizing and categorizing practice protocols produced by people who did not participate in the study. Training was discontinued when raters reached an acceptable level of interrater reliability. Interrater agreement on dividing the protocols into scorable units was 90%. Cohen's (1960) coefficient of interjudge agreement, calculated at the end of training for the nine problem solving categories, was .88.

One of the weaknesses of the Cummings et al. (1989) study was that the content of the problem solutions was not analyzed for the types of strategies employed. To address this issue, content analysis of the strategies generated for the four problems was performed. The rating was done by two different raters from the research assistants: the authors. Using protocol analysis techniques (Ericsson & Simon, 1984), seven strategy categories were developed for three of the problems and six categories were developed for the fourth problem. As can be seen in Table 1, the instruction and discipline problems share four common categories, whereas the supervising teacher and time demands problem also share four common categories. Cohen's (1960) coefficient of interrater agreement, calculated for all of the strategy categories, was .87.

Table 1
Problem-Solving Strategy Categories

<i>Instruction Problem</i>	<i>Discipline Problem</i>
1. try a different approach	1. try a different approach
2. assess the situation	2. assess the situation
3. deal with the problem out of class	3. deal with the problem out of class
4. seek help from others	4. seek help from others
5. repeat or review	5. talk about the problem
6. deal with the problem in class on an individual basis	6. take direct action
7. deal with the problem in class with an emphasis on small groups	7. use an indirect solution

<i>Supervising Teacher Problem</i>	<i>Time Demands Problem</i>
1. talk about the problem	1. talk about the problem
2. use self-talk	2. use self-talk
3. assess the situation	3. assess the situation
4. compromise/find a balance	4. compromise/find a balance
5. seek help from others	5. organize/establish priorities
6. use an indirect solution	6. take direct action
7. look for the positive	

Frequency counts were made for each category for each of the four problems to be used in the analyses.

Results

The first goal of the present study was to assess whether student teachers varied their cognitive processing for different types of problems. To address this goal, the four problem situations were grouped in two different ways (conflict vs. balance; classroom vs. nonclassroom) and two MANOVAs were performed.

In the first MANOVA, problem situations were grouped into conflict problems (discipline, supervisor) and balance problems (instruction and time demands). Independent factors were two levels of problems (conflict and balance) and three levels of testing (early, middle, late). Frequencies of occurrence of the eight problem solving elements were the dependent measures. There was a statistically reliable main effect of problem type on the frequency scores for the problem solving elements considered collectively, multivariate $F(8,21)=4.19, p=.004$. This effect was traced to two statistically reliable univariate F values for two of the eight problem solving elements. On interpersonal, conflict problems, participants used more evaluation of strategies, $F(1,28) = 5.08, p=.03$, and provided more reasons, $F(1,28) = 22.76, p<.001$. Thus students were more analytical and evaluative of their actions when the problem involved other people (see Figure 1).

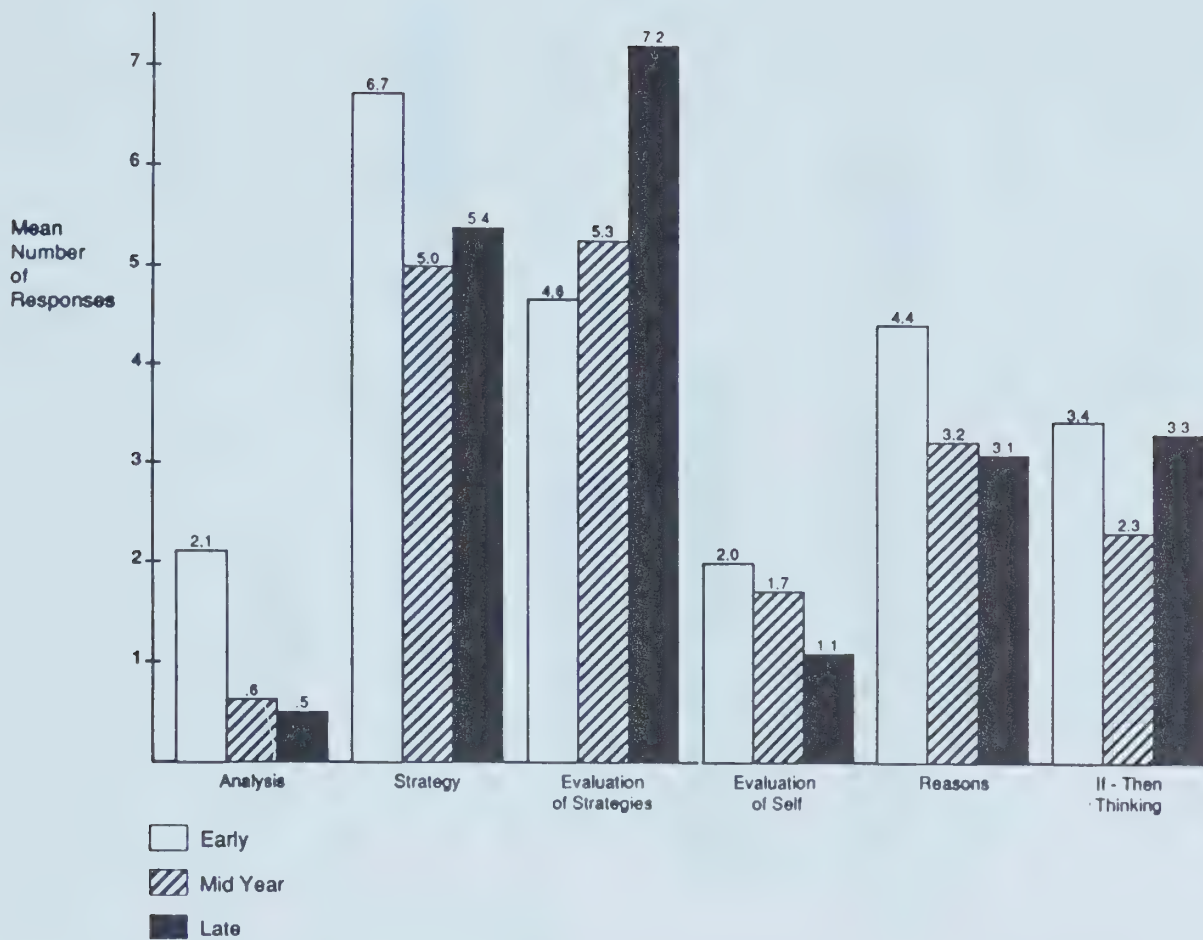


Figure 1. Significant differences in mean number of problem solving elements on balance versus conflict problems.

When the problems were combined into two classroom problems (instruction, discipline) and two nonclassroom problems (supervisor, time demands) for a second MANOVA (with three levels of time of testing again constituting a second independent factor), there was a statistically reliable main effect for problem type, $F(8,21) = 7.88, p < .001$. In this case, there were statistically reliable univariate F values for four of the eight problem solving elements. In solving nonclassroom problems, participants used more elaboration, $F(1,28) = 6.51, p = .02$; more evaluation of strategies, $F(1,28) = 10.04, p = .004$; and more evaluation of self, $F(1,28) = 43.04, p < .001$. However, on classroom problems, participants generated more strategies, $F(1,28) = 35.50, p < .001$. Mean values for the problem solving elements highlighted in these analyses are displayed in Figure 2.

The second goal of the study was to determine the relationship between different types of problems and the type of problem solving strategies used by student teachers. To determine whether there were statistically reliable differences in category usage, strategy categories that were common to two problems were compared using three MANOVAs. For the first one-way MANOVA, the independent variable was two levels of classroom problems (discipline and instruction) and the dependent variables four (of seven) common strategy categories for those two problems (try a different approach, assess the situation, deal with problem outside of class, and seek help from

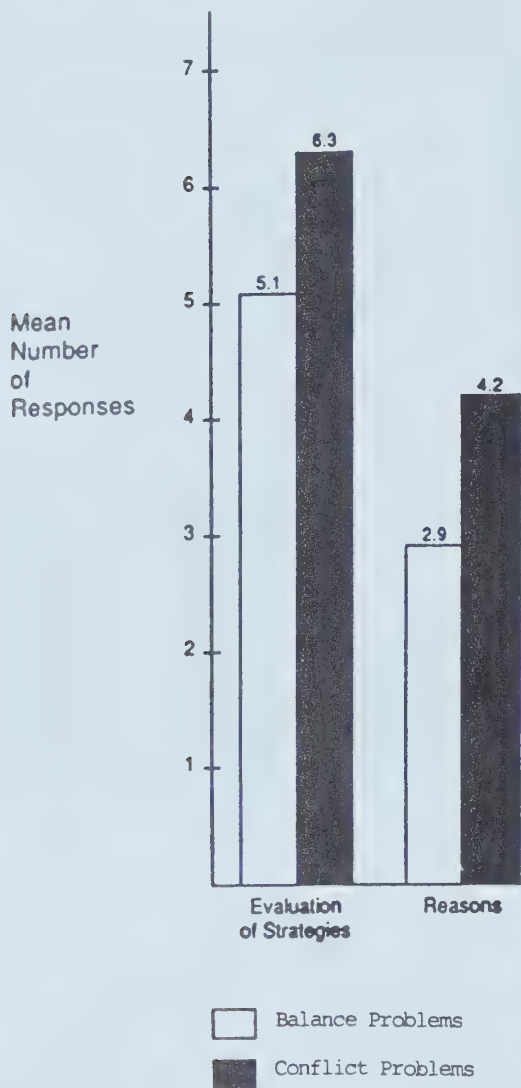


Figure 2. Significant differences in mean number of problem solving elements on classroom versus nonclassroom problems.

others). There was a statistically reliable main effect of problem on the frequency of scores for the strategy categories, $F(4,24)=7.28$, $p=.001$. This effect appeared to be due to two statistically reliable univariate f values for "try a different approach," $F(1,27)=11.85$, $p=.002$, and "assess the situation," $F(1,27)=6.72$, $p=.015$. Participants used both of these strategies more often on the instruction problem than they did on the discipline problem.

A second one-way MANOVA compared the two nonclassroom problems (supervising teacher and time demands) on their four common strategies (talk about the problem, use self-talk, assess situation, and compromise/find a balance). Once again, there was a statistically reliable main effect for problem, $F(4,24)=6.69$, $p=.001$. This effect appears to be due to two statistically significant univariate F values for "talk about the problem," $F(1,27)=25.75$, $p=.001$, and "assess the situation," $F(1,27)=5.02$, $p=.03$. Students used "talk about the problem" more often for the supervising teacher and "assess the situation" more often for dealing with time demands.

A final one-way MANOVA compared the four common categories for the interpersonal conflict problems (discipline and supervising teacher) on their four common strategies (assess situation, seek help from others, talk about the problem, and use an indirect approach). There was a statistically reliable main

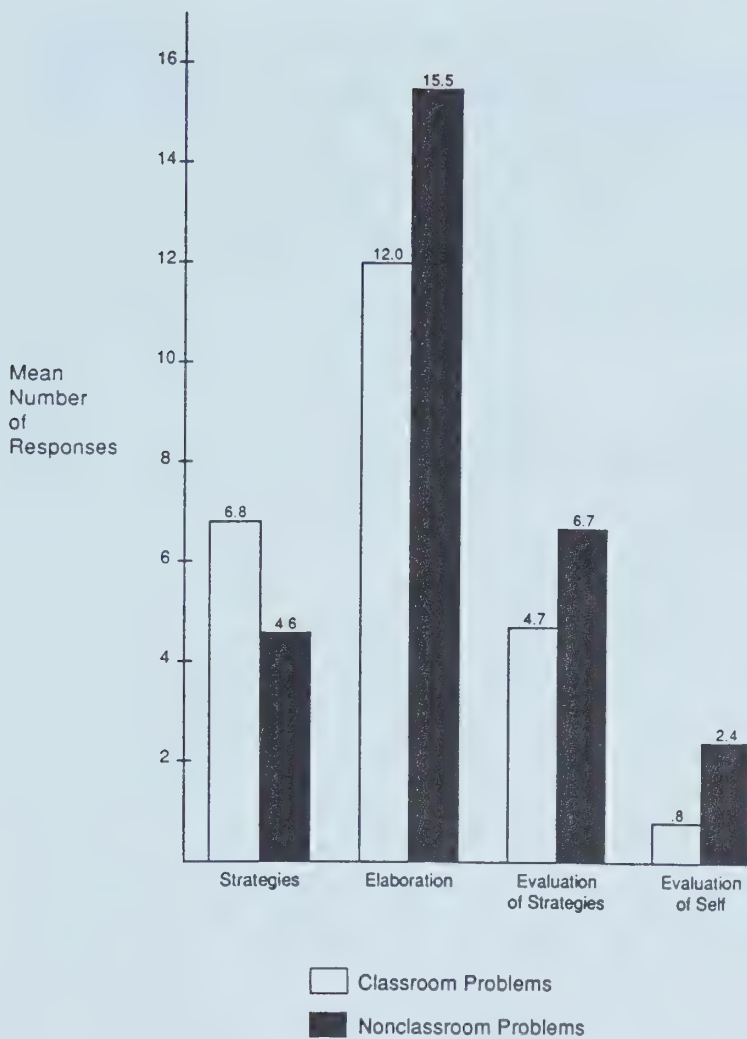


Figure 3. Significant differences in mean number of problem solving elements at three testing times: pre, mid-year, and post.

effect for problem, $F(4,24)=3.29$, $p=.03$. Two statistically significant univariate F values include, "assess the situation," $F(1,27)=6.67$, $p=.015$, and "use an indirect solution," $F(1,27)=5.86$, $p=.02$. Participants assessed more often on the discipline problem and used an indirect solution more often when dealing with the supervising teacher.

The third purpose of the study focused on examining student teachers' problem solving over time to determine any effect of experience and knowledge gained during teacher education. There was a statistically reliable main effect for time on the problem solving elements when all four problems were combined, $F(16,94)=2.20$, $p=.01$. This effect appeared to be traceable to three statistically significant univariate F values for analysis, $F(2,26)=4.08$, $p=.03$, strategies, $F(2,26)=3.55$, $p=.04$, and evaluation of strategies, $F(2,26)=3.62$, $p=.04$. Over the course of the school year, these student teachers used less analysis, fewer strategies, and more evaluation of strategies as shown in Figure 3.

On the surface, the decrease in strategies and analysis over time is puzzling. One would expect that the experience and knowledge gained during teacher education would lead to more analysis and a wider range of strategies rather than to fewer of each. To gain clarity about these results, it became necessary to content analyze the problem responses for each participant for each problem over the three testings. Although there were many individual differences in the responses, several patterns emerged from this analysis. We

need to emphasize that the following patterns can only be seen as possible trends in the data, as they were not able to be assessed through statistical tests.

Through reading the problem solutions, it became clear why there was a decrease in strategies and analysis over time. For example, on the first testing for the discipline problem, many participants would list a number of strategies that they might try. At this point in their program, the preservice teachers had not experienced a practice teaching assignment and, thus many of their problem solutions were speculative about what might work. For example, in response to the discipline problem, one participant said, "I would go to that part of the room where the students are being disruptive. If that doesn't work, I would go back again and ask them to please be quiet. If that didn't work again, I would go and sit behind them and lecture right behind them. If they were still being disruptive, I would start directing questions at them so they would have to be on their toes and get them involved...."

At the second testing after a practice teaching period of four weeks in the schools, the same participant had a better idea of what would work. "I had some general level classes and I had a lot of kids who were disruptive. I tried to break up the class into three different teaching styles. We had 75-minute periods so I had a lesson, a lecture, and I moved into individual work where a student had to hand in an assignment afterwards, and then I moved to group work. I was hopefully trying to keep them busy to avoid the situation." In this case, the preservice teacher did not have to consider many different strategies, as in the first answer, because she had found a strategy that worked for her from her experience.

Discussion

With the complexities inherent in the modern classroom, it is becoming essential that teacher education and educational research be concerned with the thinking and problem solving processes of teachers. We need to understand better the thought processes of teachers as they traverse the complex matrix of ill-defined classroom problems. By examining in detail the thought processes of student teachers as they solve typical problems in teachers' lives, we can increase our understanding of the natural problem solving processes that student teachers use and begin to determine how best to supplement these natural processes.

As in the Cummings et al. (1989) study, the type of problem influenced both the type of problem solving elements and the type of strategies employed by these student teachers. Problems of interpersonal conflict elicited significantly more evaluation of strategies and reasons, perhaps indicating that the students were more reflective about their actions when conflict was involved.

When problems were divided into classroom and nonclassroom problems, student teachers were able to generate significantly more strategies for the classroom situations. This result is not surprising given that much of their teacher education focused on specific ways of handling various classroom dilemmas.

With nonclassroom problems, students used significantly more elaboration (descriptive detail) and more evaluation, both of themselves and of the strategies they were employing. In particular, it is interesting that students

used more evaluation for nonclassroom problems than for classroom problems. When this result is combined with the greater number of strategies for classroom problems, it may indicate that these students were inclined to be more action-oriented and less reflective about their actions when dealing with classroom situations. In fact, research on problem solving consistently finds that compared with experts, novices do not reflect on their problem solving and work more on the surface features of problems (Chi, Glaser, & Farr, 1988; Eylon & Linn, 1988; Glaser, 1990).

As expected, there were changes in students' usage of the problem solving elements over time. On all four problems combined, there was a decrease in analysis and number of strategies and an increase in evaluation of strategies. It appears from the content analysis that the decrease in analysis and strategies may represent student teachers becoming clearer as a result of experience about what strategies are effective for different situations. They therefore may not need to analyze the situation as much and could be more parsimonious in their choice of strategies. In other words, they learn "what works." This interpretation is consistent with research on expert-novice differences in problem solving (e.g., Chi et al., 1988), which shows that experts more than novices activate a parsimonious set of schemata to solve problems efficiently. Of course, it is also possible that students experienced a practice effect from responding to the same problems over a six-month period that led to fewer strategies being generated.

The increase in evaluation of strategies over the course of the year is a promising finding in that one goal of teacher education programs is to help students learn to think reflectively so that they can deal with the complex problems of the classroom. It is a hopeful sign that these students were evaluating their strategies more at the end of the year than they were at the beginning. Unfortunately, we do not know if this change is a result of theoretical knowledge or practice teaching experience or some combination of the two.

When the content of the strategies chosen by students was examined, interesting patterns emerged. From the different comparisons between problems, the strategy "assessing the situation" was used significantly more often on three of the four problems. The problem that had the least frequency of this strategy involved conflict with a supervising teacher. When this result is combined with the finding that students also used an indirect solution more often with the supervising teacher problem than with the discipline problem, a possible interpretation emerges. Perhaps when students are in a position of less power and control, they are less likely to reflect or assess and more likely to take an indirect approach. In other words, indirect solutions may be elicited by the unequal power in the relationship between student teacher and supervising teacher. This hypothesis is further strengthened by considering that when the participants were in a position of greater power relative to pupils on the discipline problem, the most common strategy was "take direct action."

Another, more general, observation arises from examination of Table 1, which shows that similar problems (e.g., classroom problems of discipline and instruction) elicited both some similar strategies and some different strategies. On the other hand problems that were quite different (e.g., time demands and

instruction) elicited few similar strategies. Thus, although there are some commonalities in approaches to similar problems, the more disparate problems become, the less commonality there appears to be in efforts to resolve them.

Traditional problem solving approaches (D'Zurilla & Goldfried, 1971; Platt & Spivack, 1975), however, have suggested a rather set, linear approach to all problem solving, viewing successful problem solving as a progression through a series of previously defined steps regardless of the type of problem. The results of the present study suggest that problem solving solutions are not generalizable across persons and contexts. Perhaps preset problem solving approaches are better suited to well-defined problems of math and science than to ill-defined social problems such as those investigated in this study.

The results of this study provide useful information about student teachers' thought processes while solving typical problems. In accordance with previous research (Cummings et al., 1989), the results seem to suggest that the type of problem influences the type of cognitive processing and strategies used. As Kagan (1988) asserts, the kinds of interactive decisions made by teachers and how they shape practical problem solving are determined by the specific task environments encountered.

To address these challenges, teacher education programs might best meet the needs of student teachers by facilitating the development of context-specific schemata as well as providing general strategies that would apply across similar situations. In reviewing studies on transfer of learning, Perkins and Salomon (1989) found that effective thinking was quite dependent on context-bound knowledge and skills that do not easily transfer to other domains, thus supporting the need for cognitive training that is rooted in specific content. Brown, Collins, and Duguid (1989) refer to the situated nature of knowledge and recommend the learning of such schemata through a cognitive apprenticeship.

However, Perkins and Solomon (1989) also discovered in more recent research that transfer can occur when general principles of reasoning are taught in conjunction with self-monitoring activities and potential applications to other possible contexts, thus accenting the need for more general schemata. As Swanson et al. (1990) note, if pattern recognition is important in fields such as physics and medicine, chances are high that it will be helpful for classroom problems also. Therefore, instead of teacher education being focused on delivering facts and rules, the emphasis needs to shift to joining context-specific knowledge for solving ill-defined human problems with more general strategic knowledge.

To achieve transfer of knowledge in ill-structured domains, some authors (Spiro, Vispoel, Schmitz, Samarapungavan, & Boerger, 1987) contend that multiple interconnections among different aspects of domain knowledge need to occur in conjunction with multidimensional representations of many examples. They believe that there are no rules general enough to cover most cases. What is required, instead, is a flexibility of thinking in how knowledge is represented in memory.

Teacher education programs, then, need to encourage flexibility of student thinking. One such project is described by Stoiber (1991). Her reflective in-

struction program was designed to help preservice teachers become more aware of their decision making abilities and the differing cognitive capabilities required by different problem situations. She found that having preservice teachers think aloud about their classroom problems during teacher education experiences enhanced their cognitive monitoring and evaluative functioning.

It must be noted that the generalizability of the results of the present study is limited by the unequal sex ratio of the sample, the wide variety of grades and disciplines they were preparing to teach, and the type of teaching practicum program experienced by these student teachers. The study is further delimited by the description of classroom scenarios with only two sentences, which does not capture the complexity of classroom situations. These more narrow definitions of problems may constrict the applicability of the findings because participants' responses may not have been representative of their actual behavior in the classroom. Future research needs to study problem solving of more complex, ill-defined classroom problems through the observation of student teachers as they actively solve problems in a natural setting. In addition, having teachers think aloud about actual problem situations in classrooms through the use of stimulated recall techniques could provide helpful information about more in vivo thought processes.

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Experiential Learning Through Computer-Based Simulations

During the 1980s, many university-based preparation programs for prospective school administrators introduced practicum- or internship-like courses in efforts to establish a better balance between theory- and experience-based learnings for their students. This article reports on a project that is investigating the potential of a sophisticated interactive laser videodisc simulation to provide an alternative source of experiential learning opportunities. The major question asked is, In an experiential learning cycle, to what extent can the simulation effectively replace the real work of a principal? The answer is sought through an examination of the experiences of two distinct subgroups of students: a small number who seem to have gained very little from the simulation, and those who seem to have gained much. The analysis suggests that simulation can provide a potentially powerful vehicle for experiential learning. The article concludes with a discussion of two sets of "working hypotheses," one associated with success in learning from simulations and the other with the various levels at which students function in experiential-simulation learning environments.

Pendant les années 1980, plusieurs programmes préparatoires universitaires pour les futur(e)s administrateurs et administratrices scolaires présentaient des pratiques ou des cours genre-internats afin d'établir un meilleur équilibre entre la théorie et l'apprentissage pratique pour leurs étudiants et étudiantes. Dans cet article, on présente les résultats d'un projet qui examine le potentiel de l'apprentissage à but de formation administrative en utilisant des présentations sur disques lasers interactifs sophistiqués. Il s'agirait d'une source alternative pour l'apprentissage expérientiel professionnel. On pose une question majeure: Dans un cycle d'apprentissage expérientiel, à quel point est-ce que la simulation peut-elle effectivement remplacer le véritable travail d'un directeur ou d'une directrice d'école? On cherche la réponse à cette question en examinant les expériences de deux sous-groupes distincts d'étudiants: un petit nombre qui semble avoir appris très peu de cette simulation et ceux qui semblent en avoir appris davantage. L'analyse des résultats suggère que la simulation pourrait être utilisée comme un moyen puissant pour l'apprentissage expérientiel. On

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termine cet article avec une discussion de deux hypothèses possibles: l'une associée au succès de l'apprentissage par simulation et l'autre qui représente les différents niveaux de fonctionnement des étudiants dans des situations d'apprentissages expérimentiels et simulateurs.

Recently, preparation programs for the school principalship have been the subject of renewed interest in universities across North America. In part this has been in response to the large number of influential studies that have made convincing claims that the principalship is the most important strategic role for school improvement (e.g., Fullan, 1982; Leithwood & Montgomery, 1982; Manasse, 1985). There is also evidence that teachers and school administrators see university studies at the graduate level as an essential qualification for the principalship (McIntosh & Montgomerie, 1987). Yet university-based preparation programs, despite their perceived importance and their widespread acceptance in the field, have been criticized as being "too theoretical." Manasse (1985), for example, recommended that "the structure of preservice training should allow students to experience first-hand the hectic, nonrational world of management through some kind of observation/internship/mentoring experiences" (p. 457). Similarly, the Report of the National Commission on Excellence in Educational Administration (1987) in the United States noted "troubling aspects throughout the field, including ... lack of preparation programs relevant to the job demands of school administrators, lack of sequence, modern content, and clinical experiences, in preparation programs" (pp. xvi-xvii).

In responding to this call for more experience-based learning opportunities, many universities have developed internship or mentorship-like programs (see, e.g., Ackerman, 1991 and Ratsoy, Richards, Haughey, & Maynes, 1992). Evaluations of these programs are generally positive and encouraging, but the same evaluations raise several cautions. For example, Ackerman (1991), based on his study of the Harvard Graduate School of Education Principal Certification Program, concluded:

Inherent constraints place an unrealistic burden not only on the intern but on all parties involved in a preparation program. The limited time required for a practicum, variation in practices between sites, and inadequate supervision are only some of the factors which make the development of a full range of administrative "competencies" unrealistic. (p. 46)

In a previous article (McIntosh, Maynes, & Mappin, 1989) we argued that although internships and similar field-based programs in which students learn by doing are important components of preparation programs, the structure of opportunities in such programs presents a barrier to certain kinds of learning. Of particular concern in the *structure of opportunities* for principal interns is the inevitable trade-off between *breadth of experience* and *exercise of responsibility*. Breadth of experience refers to the range of issues that trainees will have the opportunity to work with and learn from. Exercise of responsibility refers to the extent to which trainees are given full responsibility for dealing with issues. This is the single most important factor contributing to the effectiveness of clinical training (Becker, Geer, Hughes, & Strauss, 1961; McIntosh, 1969). A different kind of learning results when trainees are respon-

sible for carrying out the work that they are learning to perform: they are pushed (or push themselves) to new levels of attainment and self-discovery.

Because of the potentially serious and far-reaching consequences of actions taken in relation to many school-level administrative issues, educators who coordinate administrative field (or clinical) training programs tend to trade off responsibility against experience. Where trainees are given direct responsibility, they are given relatively unimportant administrative assignments; in the difficult situations actually faced by administrators, trainees tend to be involved only as observers, or they may simply be given reports as to what took place in critical encounters from which they have been excluded. They exercise no responsibility.

An obvious advantage of using simulation as a base for experiential learning is that students can be given complete responsibility to deal with a full range of administrative issues. There is no need for an "experience-responsibility trade-off." But simulation brings forth different learning issues, the most pressing of which relates to fidelity or the extent to which a simulation can become reality for those participating in the simulation. The recent development of interactive laser videodisc technology has been encouraging for developers working to address this issue. In this article, we report preliminary findings about student learning from one such simulation, a sophisticated interactive laser videodisc simulation of the principalship. We begin by presenting a discussion of the model, which from the outset has formed the basis of our teaching/learning strategies, then move to a brief description of the simulation. The remainder of the article focuses on how and what students have learned from their involvement in the simulation.

The Experiential Learning Model

Experiential learning is a conception of adult learning and professional development well described by Kolb (1984) in his book *Experiential Learning*, which has been developed over the past two decades. Kolb's conception is based on the idea that it is impossible and undesirable to segment the life of a career-oriented person into a section called *work*, a second section called *education*, and a third called *personal development* (see Figure 1). As Kolb said:

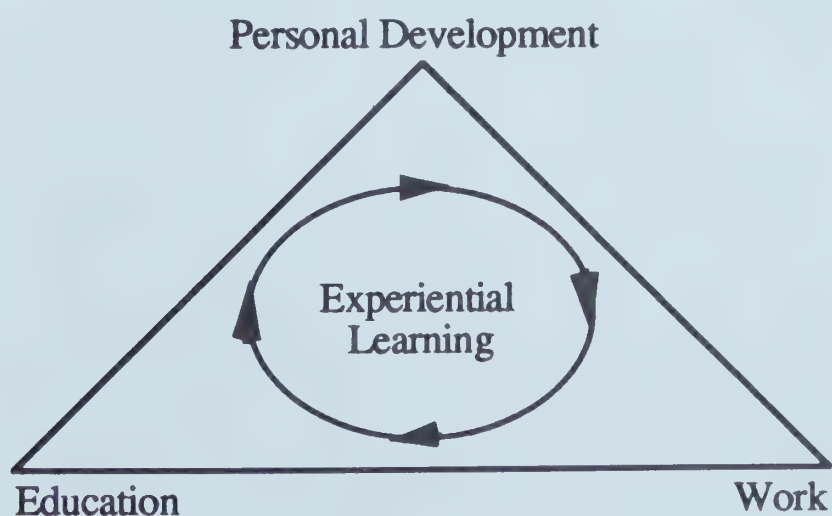


Figure 1. Kolb's conception of experiential learning.

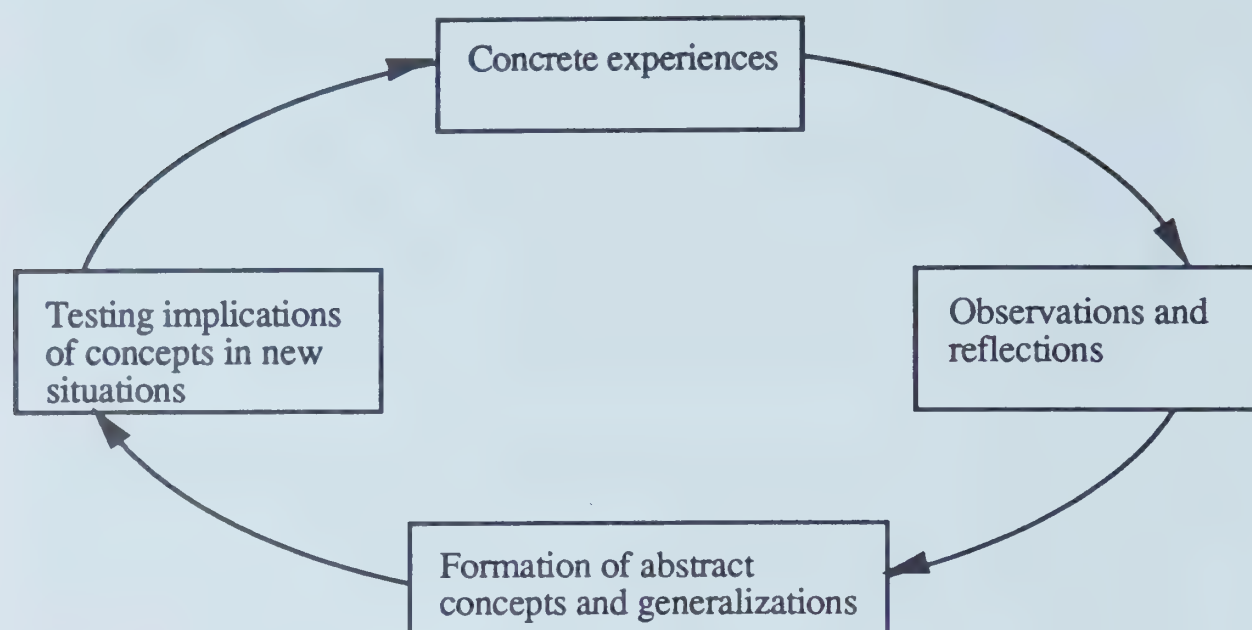


Figure 2. The Lewinian experiential learning model.

It pictures the workplace as a learning environment that can enhance and supplement formal education and can foster personal development through meaningful work and career-development opportunities. And it stresses the role of formal education in lifelong learning and the development of individuals to their full potential as citizens, family members, and human beings. (p. 4)

The origins of experiential learning are derived from the work of John Dewey, Kurt Lewin, and Jean Piaget. Without presenting an extended explanation of their work and the ways their ideas are perceived to interact, it is possible for the present purposes to illustrate the basic idea of the experiential learning process by using a model derived from Lewin's work depicting learning as a four-stage cycle (see Figure 2). Kolb (1984) describes this cycle this way:

Immediate concrete experience is the basis for observation and reflection. These observations are assimilated into a "theory" from which new implications for action can be deduced. These implications or hypotheses then serve as guides in acting to create new experiences. (p. 21)

The Experiential-Simulation Method

In bringing together the "disciplines" of experiential learning and simulation, we arrived at an instructional model with four essential elements:

1. experience of the field of practice, as provided by simulations of the work of the elementary school principal, in which the learner actively makes decisions—some of obvious major import, others apparently trivial—that are thrust upon the student-principal;
2. critical reflection on decisions taken and rationales offered for these decisions, first of all through discussion with peers and instructors in follow-up seminars, and later through reading and journal writing;
3. proactive planning in group tutorials based on assessments of the fundamental underlying issues characterizing the present situation in the

simulated school that must be addressed if the organization is to build on its strengths and best compensate for its weaknesses. These assessments are to be made within a framework of the student-principal's developing conception of the direction in which he or she, working with the staff, would like to take the school;

4. the organization of learning so acquired by the student-principal, integration of this personal learning with the literature pertinent to the field of study, and with personal values and capacities as these become progressively more clear to the learner.

A graduate-level course provides the structure in which this model is operationalized. From the first day of the course, students take on the role of Stacey Metzger, newly appointed principal of Pembina Elementary School. This aspect of the simulation is set late in June. The first task confronting students is to learn as much as they possibly can about the community, the district, and the school prior to school opening in September. The "magic" of interactive laser videodisc technology allows the presentation of a rich context within which the Stacey Metzgers will deal with administrative issues. For example, they talk with the superintendent and the outgoing principal, they have access to a relatively complete set of school files, and they see all of their teachers in the classroom interacting with children, then in other areas interacting with colleagues. That all participants in the simulation will deal with the same issues within the same rich context represents a significant advance on previous approaches to simulation or case study. But the three simulated half-days of work provide the focus for the most significant of the learning activities.

By not later than the fourth class session, the student-principals face their first half day in the role of principal. This first experience on the "firing line" takes place, according to the scenario stipulated for the exercise, in early September as the school year is getting under way. (The two subsequent exercises are set in early November, at the time of the first reporting period, when the principal could reasonably be expected to have gained a good sense of the state of the school; and in early spring, at the time when the budgeting/planning process for the next school year is well under way.)

As they begin their work day, the school secretary appears on the screen, welcomes the principal back to the school after the two-day absence stipulated in the scenario for the exercise, and provides a briefing on several concerns that have come to her attention. This is followed by a similar briefing from the assistant principal. Then a menu appears on the screen that lists the various items that have accumulated in the principal's in-basket. The student principal has 135 minutes to address the set of problems, which number in the range of 23 to 25 for each of the three half-day work sessions.

Problems are presented to the student-principals in several ways: by video presentation of paper items such as notes, memos, and other forms of correspondence; by video presentation of visitors to the principal's office (who are invited in by the principal); by unscheduled interruptions (not controlled by the principal); and by telephone calls.

The student-principals use an electronic reporting form to record their decisions and actions during the work session. At the end of the half-day's

work, the student-principals print out the record of their decisions, which they bring to the follow-up seminars and group tutorials.

The seminar, group tutorial, reading, and writing aspects of the course are important complements of the laboratory component. In turn, these latter activities, engaged in outside the simulation laboratory, are dependent for their significance on the experience students gain of the work life of the school principal in the simulation laboratory. The various course activities, in short, are mutually interdependent.

Based in major part on earlier studies of experiential learning, and to a lesser extent on studies of case and simulation methods, we anticipated that through the experiential-simulation method, students would learn about: (a) the personal demands of the principalship, especially those demands that are not meaningfully communicated "by the book"; (b) one's personal "fit" with the demands of the role, that is, the degree to which the work of the principalship can be brought into a comfortable alignment with the personal strengths, values, and aspirations of the student-principal; (c) management and human relations skills, in particular, conflict management and time management skills; (d) the development of personal resilience and sensitivity to monitor one's role performance and identify directions for improvement; and (e) problem analysis capabilities.

Studies of case and simulation methods offered some support for the expectation that problem analysis skills could be developed using experiential-simulation methods (e.g., Fisher, 1978). But the likelihood that the remaining expectations could be achieved rested on an untested assumption, namely, that the "work" component in the Kolb experiential learning model could be successfully replaced by simulations of work experience. We set out to test this assumption by addressing the question: What do students learn when they are engaged in the experiential-simulation mode of instruction?

Student Learning

Over the past 10 years of continuous work on this project we have addressed three kinds of research and development issues: technical issues (e.g., how can we best use the available microcomputer and videodisc technology to make the learning environment more interactive or responsive to the actions of the learners?); pedagogical issues (e.g., what are the inherent limitations of substituting simulations for direct experience of the world? what are the inherent limitations and strengths of "permissive" learning procedures?); and evaluative issues (e.g., what are students learning in this course? what serves to facilitate and impede student learning?).

In practice we have found that the issues are interwoven and that the fundamental issue is expressed in the evaluative question: What are students learning? Over the past five years, we have been examining this question through analysis of student journals and observations of laboratory and classroom behavior. In the analysis that follows, we discuss the approaches to learning, and the substance of the learning, of two distinct subgroups: those who seem to have gained little from their involvement in the simulation, and those who have gained much. Although the subgroup of those who gained little is quite small, their experiences of the course are quite informative. Analysis of data collected from this group has led us to propose a fourfold

typology of resistance to learning in the experiential-simulation mode. Here we present this typology in summary form so that it can serve as a contrast to our more extensive analysis of “model learners.” A more thorough discussion of this typology can be found in McIntosh (1989).

Resistance to Learning in the Simulation-Experiential Mode

Two criteria guided the selection of the students on whose experiences this analysis was based. The first was that in what was written in their journals there was little evidence of personal growth. The second was that our subjective assessments based on observations led us to conclude that they had learned little. Our analysis suggests four identifiable types of resistance to learning:

The *intellectualizer* is unable or unwilling to relate the experience of the simulation laboratories to reading in the research literature on the principalship, and to relate both of these to his or her personal development as an administrator. The intellectualizer is unable either to understand or to accept the transformational role to be played by the experiential learner—the learner as creator of personal knowledge.

The *active resister* has a clear, even shrewd, perception of the problems facing the school principal but is unable or unwilling to consider courses of action that differ from the tried and true methods arrived at on the basis of previous experience. He or she is dismissive of alternative courses of action suggested by peers or course instructors in seminars and group tutorials. The active resister says, in effect, “I cannot change. I am no longer open to the consideration of alternatives.”

The *distorted interpreter*, like the active resister, is in thrall to past experience, but the nature of the resistance is different. This learner’s perceptions of reality seem to be distorted by events experienced in the past. For example, one of our students came to us from a recent unsuccessful experience as a school principal. His “distorted vision” was most evident in any situation where staff involvement in decision making was discussed. In different ways he would express his views on staff involvement in terms such as these: “Administration is a struggle for power.... You’ve got to let them know who’s boss.... Teachers are always out to get the principal.” Thus, personal history acts as a filter that often interferes with the distorted interpreter’s perception of problems that he or she is called upon to address in the laboratory setting.

The *self doubter* may be keenly perceptive and avidly open to the style of learning called for in the course. However, this learner brings to the experiential learning setting a legacy of self doubt. The following pattern characterizes one self doubter we have worked with in the course: rigorous, almost painful, honesty in self assessment of performance in the simulation exercises; a propensity to “get down” on himself; a tendency to dismiss his own analyses as insufficient authority for resolute action; an overwillingness to second guess his actions as he reflected on his performance; and a penchant for engaging in agonizing reappraisal of beliefs and commitments. We see the self doubter as someone open to further learning, but because of self doubt unable to take full advantage of the insights gained from experience and thus unable to develop as a person on the job.

Model Learners

In the discussion of resistance to learning, our purpose is to examine the experiences of our least successful course participants so as to inform our view of how students learn in simulation environments. In this section, we pursue a similar purpose, but through an examination of the experiences of two successful learners.

Elaine (a pseudonym) has had 10 outstanding years as a high school teacher, and at the time of her studies with us was on sabbatical leave to complete a master's degree in educational administration. She has had no administrative experience and at the beginning of the course was not certain whether she wanted to become a school-level administrator. Her immediate career goal was to become a consultant with the central office in her district. One of Elaine's major purposes in taking the course was to arrive at a personal resolution with respect to whether she would pursue an appointment as a school-level administrator.

Steve (a pseudonym) is an experienced and successful school superintendent who was also on sabbatical leave at the time of his studies with us. He holds a Master of Education degree, and was registered in a postgraduate diploma program in the Department of Elementary Education. Steve felt that because all of his teaching and school-level administrative experience was at the secondary level he was not as in touch with the elementary schools in his district as he would have liked. He therefore set the goal of his sabbatical leave as learning as much about elementary education as possible, hence his choice to register in our course which simulates an elementary school principalship.

Elaine

Elaine approached the course with a tremendous amount of self-doubt, which she expressed in her first journal entry as follows:

This course both excites and frightens me.... Much of this fear comes from my perceived inability to handle day-to-day decision making that affects so many, as is the case in the principalship. The fear of making the wrong decision and losing face with staff, parents, and students is very real for me.

Then later in the same journal entry:

As I ponder, the more I question my ability to be a principal. I am excellent at organization, but have difficulty asking others for help. I can see areas in need of change but would have difficulty persuading others because of my lack of self-confidence. I am a sincere person and would have difficulty reprimanding others. I am a perfectionist and worry about burning out.

Her self-doubt is obvious, but in the latter quote, we see another dimension of Elaine. She takes careful measure of her strengths and weaknesses and is open to admitting both. Throughout Elaine's journal we see evidence of a strong internal locus of control. She takes full responsibility for what she is and for what she can become. This factor in itself may explain why Elaine's self-doubt proved not to be disabling as it was in the case of the self doubter we presented earlier in this article.

As Elaine worked through her self-doubt, she found that much of it was rooted in an elevated view of what good principals do and are capable of doing. Having a superintendent and several experienced principals present in

seminars to discuss how they had chosen to deal with specific incidents proved to be liberating for Elaine. To her it was a revelation that principals do not always have a “one best answer” to a situation. About this she wrote:

It is very reassuring that persons currently in principalship roles don't necessarily agree on strategies they would use in each case. Also, many have specified that their decisions would change depending on the context of the situation for each child. In other words, there are no right or wrong definite decisions. As a math person, this is hard for me. I am looking for a formula whereby if this happens you do this—every time! ... I am now beginning to see that people just don't fit into formulas and so can't all be treated exactly the same. *I'm also getting the feeling that a principal is only human, bound to make mistakes, and must get up, shake it off, reaffirm their belief in themselves, and carry on.* [our emphasis]

She concluded this reflection with a powerful quotation from Eleanor Roosevelt: “No one can make you feel inferior without your consent.”

As the course unfolded, Elaine included more and more comments about her ability to do a good job as a principal. She wrote that the exceptional principals she knew worked at the “symbolic” level and:

Their very actions spoke their values and beliefs of schooling. *I think I would be able to do this.* I always try and “practice what I preach” to my students, and it gains their respect. [our emphasis]

When Elaine discovered that in many cases she made the same decisions as practicing principals, her confidence was further enhanced. After each simulation experience, students have access to descriptions of how the principals in real life handled the situations on which our simulation is based. Following the second simulation experience, Elaine wrote:

I checked the actual principal solutions for the items in In-basket #2. I find this activity completes the cycle for me, and I find it especially useful after the debriefing session where the class has had a chance to share possible solutions. *I was pleasantly surprised that my actions coincided with many of the “actuals.”* [our emphasis]

Even as she was gaining confidence, Elaine continued to be self-critical, but never in a disabling way. Her self-criticism was aimed at learning. This is evident in what she wrote about one of the incidents presented during the simulation in which a male driving a blue Camaro had attempted to pick up two girls on their way to school:

The Blue Camaro incident was a real shock for me as we debriefed it. All I had considered doing was following up on the police investigation within two days. I assumed that because the police were involved, I had no other responsibility. What a mistake! What a learning experience! That is one reason why I feel a course like this is so important. I don't want to learn about being a principal the hard way—at least, not out in the real world. I think it is valuable in this kind of setting where you can make mistakes the hard way and know it is only intended to teach. I have a real fear of losing credibility as an administrator, and an incident like this could easily do it. Now I know how I might handle it differently and more effectively.

There are many examples in Elaine's journal of her openness to this kind of learning. She continuously reflected on her performance in the simulation.

And most often it would have been difficult for an uninformed reader to know that she was not writing about real experiences. The extent to which Elaine projected herself into the role of Stacey Metzger is reflected in a comment she wrote in her journal the week prior to a simulation experience. She had just made a very confident statement about her ability to “handle this kind of position.” Then wrote: “So why is my stomach still churning in anticipation of next week??” We believe that it was churning because Elaine saw herself as the principal, responsible both for resolving the issues with which she was to be confronted next week, and for setting a direction for her school. There is no evidence that she made any effort to distance herself from the simulation.

The way Elaine worked toward developing a personal understanding of the events of the course caught our attention. In almost all of her journal entries she brought to bear her own views, the views of others in the course, and views expressed in the literature. Her resolution of whatever issues she was grappling with inevitably was an amalgam of these perspectives. This suggests to us that she viewed all three sources as valuable and important to her search for understanding. Compare this with the self doubter who dismissed his own views, and the active resister who dismissed any view other than her own.

Elaine’s work ethic also deserves mention. Her journal contains reference to most of the readings that students were invited, not required, to read. She spent hours learning about the context of the simulation—the school district, school, students, and staff of Pembina Elementary School. And her journal is a small book!

What was Elaine’s final resolution with respect to whether she ought to pursue a school-level administrative position?

[The course] has helped me tremendously with my self-confidence in a way that theory classes aren’t capable of. Role playing is a definite advantage of this course and I would recommend it highly to anyone having no administrative experience. It has further helped me decide that I *can* handle such a position and that I am willing to try it. [Her emphasis!]

Steve

The first task faced by students in our simulation course is to become familiar with the context in which they will be working. And this is no mean feat. There is a very large quantity of information to be mastered about the school, the district, the students, and staff. Steve approached this task in the way we intend; he assumed complete personal responsibility for knowing this information. And, as would a new principal moving into an unknown school district, he extended great effort to acquire that knowledge. This is just one example of the extent to which Steve projected himself into the role of Stacey Metzger, principal of Pembina Elementary School. Steve’s learnings from the effort he extended at this stage of the simulation are interesting. He wrote:

I’ve just completed a four hour session of going through the Filebox/Orientations/ ... to better familiarize myself with Rutherford and Pembina and am suffering the effects of “information overload.” On a number of occasions during my career I’ve experienced the stress and overwhelming need of learning a vast amount of information about a school’s or organization’s circumstances in order to be able to carry out the requirements of a new job, but I guess that

time has dulled my memory. This simulation has reactivated the feelings (memory) in vivid clarity.

This experience reminded Steve of the complexity and difficulty of the principal's job:

A point reemphasized to me by the simulation was that principals have to know a hell of lot about a hell of a lot of things. Their jobs are very demanding and cover a large gamut of skills and range of knowledge about many areas.

These were significant insights with consequences for action. Steve has now planned a much more accessible and supportive program of orientation for neophyte administrators in his district. Of his learnings, he wrote:

I know that the foregoing does not represent any real profound insight, but it has really impacted on me—maybe in a “feeling” (emotive) rather than “thinking” (cognitive) way. Whatever, it has motivated me to resolve to be more proactively supportive during the beginning period of a newly appointed administrators tenure.

In response to this comment, we wrote: “Profound insights are personal phenomena, not to be measured by any standard outside of your own experience.” Steve's insights illustrate the way he personalized the simulation experiences and utilized them to examine current practices and beliefs, leading to personal insights and commitments to action.

At the beginning of the course, we ask students to write to us in their journals about what they hope to gain through their participation. This is part of Steve's response:

I'm particularly looking forward to being able to respond to simulated issues (In-Basket exercises) and then analyze and compare my responses to those of classmates. We are unable to do many meaningful comparisons in real life—there, we're the only ones who took the action and to ask another person what they *would have* done in our place often gets just an offhand opinion (the issue is hypothetical to them and consequently they will not put the soul searching into it that you did).

Indeed, as the course unfolded Steve did find this a rich source for reflection. The range of experience represented by the students in the class contributed to this. There were teachers, consultants, assistant principals, and principals with whom Steve (the superintendent) could examine decisions taken during the simulation. He commented a number of times that it was useful for a superintendent to revisit teachers' and principals' perceptions and approaches to specific incidents and to broad educational issues. Indeed, this was the source of some personal reflection. With respect to one set of staff-related simulation incidents, he commented:

My suggested courses of action ... when compared to those of other class members reveal that I was inclined to adopt a more direct and abrupt response.... It appears from the comments of my classmates that I was inclined to “shoot faster” than they were in these instances, and this prompts me to consider the pros and cons of my stance.

In the consideration that followed, Steve examined the potential strengths and weaknesses of his approach. Like Elaine, he openly wrote of both. There is

no evidence of defensiveness, only of openness to learning. For Steve and Elaine, self-criticism appeared to be a catalyst to learning. This is in sharp contrast with the disabling effect that self-criticism had on the self doubter.

Steve's openness to learning is well illustrated through his experiences with the telephone-caller component of the simulation. The telephone evaluation reports that Steve received after the first simulation experience suggested a level of performance that did not meet his standards. Based in part on our seminar debriefing of the telephone call incidents, Steve set in place a plan to improve his telephone performance during the second simulation experience. He reported that as a consequence of his plan, "my overall rating, and those of most categories have improved." But he was concerned that "I still have a problem of working to facilitate an understanding of the nature of the caller's problem and its importance to him/her." Reflecting on this, he wrote:

I realize that two sets of three phone calls do not provide definitive proof regarding the nature of my telephone skills but they may very well suggest valid indications (what the heck, they represent the best (and only) data I've got on the issue). I'm heartened by the indicated improvement, and will continue to work on this skill.

In this endeavor, as was the case with all of the matters with which Steve dealt during the course, his search was not limited to an exploration of personal experience. He read voraciously and incorporated what he read in his thinking. In a journal entry written four days after that quoted immediately above, Steve reported having read an article entitled "What to Do When You're Verbally Attacked." Of this he wrote:

This article has suggested one possible source of my problem. I think I try to impede the caller's anger/criticism rather than trying to understand it; I may, too quickly, try to maneuver the conversation away from statement of the problem (negative message) in an effort to get to defence (blunt the attack) or solution. By my doing so, the caller probably feels that he hasn't "had his day in court" and that I'm not really interested in his concern or its importance to him. I'll have to try to slow down and give the initial outpouring its due time.

This was Steve's typical approach to thinking about course experiences. He moved easily from using the simulation experiences as a filter for his thinking, to using his superintendency experience as a filter, to using the literature as a filter. And he was comfortable in any combination of these approaches. Steve is a sophisticated learner.

Steve, like Elaine, demonstrated an exceptional work ethic. One of the reasons that he was able to integrate the literature so well with his thinking is that he read all of our suggested readings and sought out other sources on his own. And his journal is a larger book than Elaine's!

What has been written above does not adequately describe Steve's sophistication as a learner, but perhaps it does convey enough to provide readers with a sense of why he was successful in the course. The last words about his success in the course go to Steve:

Aside from the insights I've gained from reading, reflection and class interaction; and the improvement of skill (hopefully my telephone skills); I've gained a reintroduction to and appreciation of, the principal's roles, pressures and

frustrations. I think that this will have a positive impact on my interactions/decisions/relations with principals; both they and I, and consequently the system, will benefit from this.

Reflections on Success

The approaches to the course of Elaine and Steve (and others who were successful in our course) had much in common. These commonalties, juxtaposed with observed characteristics of those who have demonstrated resistance to learning, have led us to seven propositions about factors likely to contribute to success at learning from simulations. We think of these as “working hypotheses” that we will continue to explore.

Work Ethic

Both Elaine and Steve demonstrated an exceptional work ethic. They put in hours beyond what would be required for satisfactory performance in the course, and this without the external motivator related to the possibility of obtaining high marks (the course is graded credit/non-credit). We speculate that they bring this same work ethic to all that they do.

Ability

Elaine and Steve are talented, intelligent, and thoughtful. Perhaps Griffiths (1988) was correct when he wrote, “there are no recorded examples of good dumb principals or successful stupid superintendents” (p. 12).

A Base of Successful Practice

Elaine was an accomplished teacher, and Steve a successful superintendent. The self doubter, on the other hand, had experienced considerable difficulty in his latest placement as a teacher. In part this may explain why Elaine was able to use her self-doubt as a catalyst for learning, while the self doubter was disabled by his. The student with distorted vision provides a second example of a person whose unsuccessful practice interfered with his ability to learn from the course experiences.

Internal Locus of Control

Elaine and Steve demonstrated strong internal loci of control. They accepted responsibility for what they were and for what they were to become. This left them searching for, and open to, learning opportunities.

Purpose

Although Elaine’s and Steve’s purposes for taking the course were different in some respects, they were similar in fundamental ways. Both sought to learn about the principalship from a perspective that was very personal and significant with respect to the positions they held in their school districts. Elaine wanted to know whether she could handle a principalship, and Steve wanted to better understand the work of the elementary school principals he supervised. Their approach was in marked contrast to that of another student who appeared to be taking the course only to fulfill the requirements of a master’s degree. This student seemed to always know the minimum amount he needed to do for credit. In pursuing that minimum, he found it! He gained very little from the course, but then, that was his purpose.

Valuing All Sources of Information

Elaine and Steve sought and carefully considered information from themselves, colleagues, instructors, and the literature. The self doubter, on the other hand, did not value his own views, while the active resister valued only her own views. Neither approach facilitates learning through reflection.

Becoming Stacey Metzger

Elaine and Steve projected themselves completely into the principalship of Pembina Elementary School. They assumed responsibility for what was happening in the school, and became affectively and cognitively engaged in their roles. The decisions they were making were real to them, and they were responsible for the consequences of those decisions. This is what the intellectualizer was unable to do, and what resulted in her distant and academic approach to the course.

Levels of Experiential-Simulation Learning

Based on early work with the simulation course, McIntosh (1989) proposed the following as a framework helpful in understanding the levels at which students worked in our experiential-simulation learning environment:

Level 1. The learner understands the learning model and accepts responsibility for transforming experience into personal knowledge as called for in the model.

Level 2. The student is able to discriminate the significant from the insignificant in the experience which he or she encounters. This might be referred to as the “ah-hah” stage. The student has capacities for sensitive perception, for clear-minded recognition that a particular experience is an opening toward learning more about his or her performance of the principal’s role.

Level 3. The student is able to work with an intuition that an experience is important, and bring to conscious awareness by valid interpretation the significance of the experience (or passage from the reading).

Level 4. The student establishes connections between seemingly disparate and unrelated experiences so as to discern “unifying strands of insight.” The knowledge so acquired is personal knowledge, that is, it is knowledge of self in relation to knowledge of the roles, relationships, and dynamics of organizational behavior in schools and the administrative tasks of schooling.

Level 5. The fifth level is that of personal resolve and action, that is, of commitment to act upon the new learning in relevant ways and to reflect upon the effects of these actions.

We do not view this model as describing a sequence through which all learners move, nor do we yet understand the extent to which the model will be useful in helping us understand the development of individual learners. It is useful, however as a heuristic for understanding the levels at which a particular learner is operating at a particular time. And we have observed that the most sophisticated of our learners seem to function regularly at the higher levels, while less sophisticated learners very seldom work at levels 4 and 5. At this early stage in our work we view this model of experiential-simulation learning as tentative, as a set of working hypotheses about which much more is to be learned. The analysis of model learners, however, increases our confidence in the model. The descriptions provided above demonstrate that

Elaine and Steve did engage in all five levels as they learned from their simulation experiences. Moreover, *they* seemed to define their success in terms of whether they were able to arrive at some sort of personal resolve and commitment to action (level 5).

Our understanding of the model has been enriched by the analyses, both of resistance to learning, and of model learners. The former allows us to speculate on possible roadblocks that may confront students in their efforts to learn from our course, and the latter to speculate on characteristics students possess, or may choose to invoke, and that may enable them to successfully negotiate each of the levels of learning.

We also feel closer to an understanding of one of the central issues related to learning from simulations. For us, this issue is expressed in the question of whether in our course simulation effectively replaces work in Kolb's conception of experiential learning. We no longer expect an absolute answer to the question. Certainly simulation cannot become real work. But in relation to our instructional purposes, and for some students, the simulation acts pedagogically as the functional equivalent of work. Students like Elaine and Steve project themselves fully into the role of Stacey Metzger. For them, the simulation is work. Other students have distanced themselves to some extent from the role. For them the simulation is, in various degrees, less like work, less like the real thing. We now look at this aspect of experiential-simulation learning as a type of contract. Our side of the contract is to provide as inviting a simulation of the work life of a principal as possible. But the contract is engaged only at the will of the student. We believe that the analysis reported in this article brings us closer to understanding the nature of the contract and our role in facilitating engagement.

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Socializing Experiences of Aspiring Principals

The research addressed the socializing experiences of aspiring school principals enrolled in a mandated principal certification program. This was done in an effort to improve our understanding of certain socializing influences, not necessarily related to program content, that affect the impact of formal principal preparation courses. Data were collected by means of a pre-course survey, interviews, and dialogue journals from a sample of 87 candidates enrolled in a preparation course delivered in the Northwest Territories. An original conceptual framework, derived from earlier work by Van Gennep (1960) and Greenfield (1985), as well as a grounded analysis procedure, were employed as data analysis procedures. Results suggest that internal processes (e.g., personal challenge, thirst for knowledge) figure prominently as influences on individuals choosing to pursue school leadership roles. Organizational/contextual factors (e.g., a mandated course, financial support), and the influence of other people, become influences somewhat later in the socialization process.

L'objectif de cette recherche s'adresse aux expériences de socialisation de futurs administrateurs et administratrices scolaires inscrit(e)s au programme de certification obligatoire. Le but de cette recherche vise à améliorer notre compréhension de certaines influences sociales qui n'étaient pas forcément reliées au contenu du programme mais qui influencent l'effet voulu de ces cours d'administration préparatoires formels. Les données ont été collectionnées par l'entremise d'un questionnaire administré avant la présentation du programme, par des entrevues et par un journal où on dialoguait avec des participants et participantes choisi(e)s de 87 candidat(e)s inscrit(e)s au cours préparatoire donné aux Territoires du Nord Ouest. L'encadrement conceptuel a été inspiré d'un travail réalisé au préalable par Van Gennep (1960) et Greenfield (1985) ainsi que par des procédures d'analyses de données actuelles qui servaient de moyens d'analyse de toutes les données. Les résultats suggèrent que des processus internes (par exemples : défis personnels, soif de connaissance) sont des influences très importantes dans la vie des individus qui choisissent de poursuivre des rôles administratifs scolaires et des rôles de leadership. Des facteurs contextuels et organisationnels (par exemples: cours obligatoire, appui financier) ainsi que l'influence subit d'autrui, deviennent aussi des influences qui apparaissent, bien qu'un peu plus tard.

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Departments of education in North America and Australia continue to rely heavily on formal training programs as the chief means of socializing aspiring school administrators. There also appears to have been a general shift away from the more serendipitous and informal socialization processes typical of the past (Feldman, 1989; Schein, 1968; Van Maanen, 1976), and an increased commitment toward specific and often mandated preparation experiences.¹ This is a trend that has been supported, and indeed fueled, by the substantial body of applied research that has accumulated in recent years purporting to describe the nature of administrative expertise (see Burdin, 1989; Greenfield, 1987; Leithwood, Begley, & Cousins, 1992).

Principal preparation programs can now be grounded in more than just the context-bound practices, or theories-in-use (Argyris, 1982) manifested by local practitioners serving as instructors. The availability of research-derived knowledge on effective administrative practices has permitted the design and development of much better validated preservice programs for principals (see Daresh & Playko, 1992). However, as positive an outcome as this might seem, we still don't know much about the factors that cause individuals to pursue school leadership positions and enroll in principal preparation programs in the first place. Furthermore, as Leithwood, Steinbach, and Begley (1992) report, the disturbing reality is that "formal preparation programs for aspiring and practicing administrators appear to vary widely in their perceived value ... extremely helpful or not very helpful at all" (p. 301). Apparently a number of factors not necessarily related to program content influence the impact of formal principal preparation courses.

Trainers and sponsors of school leadership programs have discovered the need to be sensitive to the influence of certain other factors associated with the socialization of both aspiring and incumbent administrators. For example, in our experience as program developers since 1985, we have noted that people enroll in our training programs for a variety of reasons and with a range of expectations. Readiness levels can vary so greatly within a given cohort of candidates that course implementors are sometimes presented with instructional challenges that parallel, or even exceed, those faced by a teacher in a completely destreamed elementary panel classroom. To be specific, depending on whether a serious needs assessment process precedes course development and what criteria are employed for candidate selection, participants enrolled in principal preparation programs may bring to the experience a relatively broad spectrum of prior experiences, training needs, and personal expectations. These "base rate" characteristics (Feldman, 1989) constitute candidate readiness for participation in a particular program. A typical outcome is that the needs of all candidates may not be met by the provision of experiences that instructors have identified as conceptually relevant, no matter how exemplary the syllabus. Given our apparent reliance on formal training programs as the primary means of socializing aspirants to school leadership roles, this is cause for some alarm. These issues of divergent expectations and varying levels of candidate readiness could be simply accepted as confounding variables that must be controlled for by instructors during course delivery. However, we preferred to view the situation as an invitation to conduct further research on the nature of those factors that influence the socialization

of aspiring school administrators. In particular we were interested in discovering how individuals decide to pursue school leadership roles and what motivates them to enroll as candidates in preservice training programs. This article reports the findings of our initial efforts in this direction.

Objectives of the Study

The context of our inquiry was a principal certification program developed by the Centre for Leadership Development at the Ontario Institute for Studies in Education under contract with the Northwest Territories (NWT) Department of Education. The general intent was to conduct research on the factors influencing the socialization experiences of approximately 100 aspiring and incumbent principals prior to and during their participation in a two year preservice program. Three specific research questions were addressed by the study:

1. For what reasons do course candidates decide to pursue the principalship as an educational role?
2. What influences do course candidates report on their decision to enroll in a formal preservice program intended to prepare them for a school principal's role?
3. What factors influenced the candidates' decisions to enroll in the Northwest Territories Principal Certification Program?

Alternate Images of the Principalship

Research findings on school leadership practices are now quite well documented (e.g., Leithwood, Begley, and Cousins, 1990). A number of well validated conceptual frameworks have emerged. Among the most notable are those that focus on the notions of instructional leadership, school improvement and, more recently, transformational leadership (e.g., Duke, 1987; Greenfield, 1987; Hallinger & Murphy, 1987; Leithwood & Steinbach, 1991). More to the point, we now have an increasingly firm basis on which to describe the knowledge, skills, and attitudes important to school administrators. This is not an insignificant achievement given the lack of consensus typically encountered on the questions of purpose and goals for school administrator preparation processes (Begley & Cousins, 1990).

In Ontario, the Northwest Territories, and Western Australia virtually all principal preservice preparation programs now manifest varying degrees of commitment to the view of the principal's role usually described as instructional leadership. It is possible to argue convincingly in support of more recently developed conceptions of the role, such as transformational leadership. However, given the mandated nature of the syllabus for most principal certification programs, and the natural time lag encountered when new knowledge impacts on established procedures, we concluded that instructional leadership remained the appropriate image of the role on which to base our inquiry.

Instructional leadership, the desired goal of socialization for our immediate purposes, is usually characterized by the presence of a clearly articulated educational philosophy, extensive knowledge about effective educational practices, and a clear understanding of the policy environment framing the school's purposes and practices. This image of the role emphasizes leadership

as well as management functions and extends considerably beyond the performance of routine work tasks, the usual domain of training research. In the research community, justification for an instructional leadership approach to school administration has been based largely on the premise that certain characteristic actions of principals, intended to encourage and support classroom practices linked by research to improved student outcomes, have a positive impact on student achievement. However, research by Heck, Larsen, and Marcoulides (1990) has also begun to validate the instructional leadership role of principals as a causal link to improved student outcomes. The characteristic actions associated with instructional leadership that have been positively linked to student achievement include managing the political relationship of the school to its environment, supervising the school's instructional organization, and building a positive climate for learning.

To foster such an orientation among aspiring principals, particular training metaphors, typically derived from research, are employed to structure preparation programs. For example, the principal preparation programs sponsored by the Ontario Institute for Studies in Education (OISE), delivered annually in Ontario and the Northwest Territories, employ Leithwood's Principal Profile (1988) as a basis for describing and articulating an instructional leadership role along four dimensions (goals, factors, strategies, and decision making) and four levels of role performance ranging from typical practice to exemplary practice.²

A Role-Specific Conception of Principal Socialization

Feldman (1989) sheds some conceptual light on the subject of socialization by reviewing several definitions in a chapter-length piece that compares the contribution of socialization research and training research to organizational development efforts. He cites Brim's (1966) definition, which we find particularly apropos, "the manner in which an individual learns that behavior appropriate to his position in a group through interaction with others who hold normative beliefs about what his role should be and who reward or punish him for correct or incorrect actions" (p. 3). Feldman (1989) also points out that socialization research has tended to focus most closely on the informal ways by which individuals learn about their work settings, and the impact of others on that learning. Training research, in contrast, has been most concerned with the ability of individuals to perform routine work tasks (p. 377).

In response to Feldman's observations, we decided to integrate both the socialization and training perspectives in the conceptual framework of our study. To achieve this integration, we chose to assess the influence of various socializing experiences on aspiring principals in terms of the contribution they make toward the attainment of a particular espoused image of the effective principal. For our purposes that image was the instructional leader.

Basic to our inquiry was the need for a role specific conception of the factors that at least hypothetically leads to the development of an instructional leadership orientation to the principal's role. We were also interested in recognizing, within our framework, the developmental aspects of the socialization process. Although the literature in this area of socialization research is not extensive, work by Van Gennep (1960), Greenfield (1985), and Leithwood (1988) were found to be most useful.

Factors	Stages of Socialization (Van Gennep, 1960)		
	Separation	Transition	Incorporation
<i>Internal Processes:</i>			
- values - cognitive processes			
<i>Relationships with:</i>			
- superordinates - peers - subordinates			
<i>Organizational/Contextual:</i>			
- organizational culture - district policies - selection/promotion procedures - formal training programs - informal training (mentoring etc.) - communication networks - planned critical events			
<i>Image of the Role:</i>			
- goals - factors (school/classroom) - strategies - decision making			

Figure 1. Conceptual framework (Begley 1990)
Factors contributing to the development of principals with instructional leadership orientations.

Van Gennep's (1960) three-stage model of professional socialization (separation, transition, and incorporation) proved helpful in conceptualizing the developmental process whereby individuals are influenced by a number of socializing factors (see Ronkowski & Iannaccone, 1989). Given the array of educational experiences and skills required for the development of a comprehensive image of leadership effectiveness, it seemed important to take a longitudinal and developmental view of administrators' socialization experiences. Thus we decided to employ this model as the second side of a two-way conceptual matrix (see Figure 1) to accommodate potential variations in the impact of the various socializing influences over time.

The Van Gennep (1960) model suggests a process of general professional maturation progressing from being defined by others to being self-defined. According to Van Gennep, at the separation stage people are concerned with comparing themselves with others and how others judge their adequacy. At the transition stage the pattern of "self location" is against the standards imposed by the functions of the job and task performance. At the incorporation stage individuals make comparisons between their former and present self (e.g., perceptions of progress made from a previous self toward becoming an instructional leader).

More recently, Leithwood et al. (1992) have described principal socialization within five dimensions; in a manner consistent with Greenfield's (1985) claims concerning mediating influences on principals' socialization (work setting, culture, and relationships). The five dimensions in the Leithwood model are relationships with superiors, relationships with peers, district policies and procedures, formal training, and outcomes. The last dimension incorporates several subdimensions: image of the role, skills, norms and values, and communication networks.

Our own framework, used as the second side of our conceptual matrix, (see Figure 1) employs four dimensions. These are internal processes (values, cognitive processes), relationships (with superiors, peers, and subordinates), organizational and contextual factors, and image of the role.

Two key differences distinguish the model employed in this study from the Leithwood framework. Conceptually we wished to recognize the influence of internal processes, such as personal and professional values (Hodgkinson, 1987), as a separate dimension. This arrangement of the framework dimensions illustrates our particular interest in assessing both the relative importance of personal values as an influence on socialization and the individual's perception of socializing experiences. Previous research (Begley & Leithwood, 1990; Campbell-Evans, 1991) suggests to us that personal values may be antecedent to other socializing influences. The Leithwood model, in contrast, focuses more particularly on a collective organizational perspective.

The second difference in our model involves the elimination of Leithwood's outcomes dimension altogether and the repositioning of several subdimensions. For example, in our framework "image of the role" is treated as a separate dimension. We hypothesized that aspiring principals have an image of the principal's role (however appropriate or inappropriate it may be) prior to, as well as during and after, the socializing experiences associated with formal training.

Other minor variations incorporated in our framework include repositioning "communication networks" as an "organizational and contextual factor," and adding "critical events" as another variation of contextual factors. The term *contextual factors* incorporates into our framework the potential influence of organizational policies and procedures on socialization as well as that broad range of potential environmental influences identified in planned change literature (Fullan, 1991; Huberman & Miles, 1984). For example, the concept of critical events is taken from the "intervention taxonomy" of Hall and Hord (1984). This subdimension permits the accommodation of perceptions reported by course candidates that they view as particularly significant or hinging influences on their socialization.

Procedures of Data Collection and Analysis

Approximately 90 candidates enrolled in two sections of the NWT Principal Certification Program implemented by OISE during 1989-1990 constituted the sample for this inquiry. Data collection for the study was conducted in three ways; a pre-course survey, interviews with individual candidates conducted by a participant observer, and access to dialogue journals kept by candidates and instructional staff.

The pre-course survey was distributed to all candidates by mail several weeks prior to the beginning of the 10-day course. Completed surveys were collected on the first day of the program. As expected, a few candidates (10 to 15) arrived for the course without the survey completed. However, a 100% return rate was achieved by requesting that these individuals complete the survey within the first two days of the program. The questions in the survey were organized in six sections; entry process, career aspirations, goals, image of the principalship, decision making, factors, and strategies. Completion of the survey provided information on why candidates enrolled in the course, what factors influenced their decision, prior leadership experiences or training, their image of an effective principal along several key dimensions (goals, factors, strategies, and decision-making), and their personal expectations for the course.

Once the course was underway, one investigator acted as course principal while the other worked as a participant observer and interviewer. Seven candidates, all aspiring principals as opposed to incumbents, were approached and subsequently agreed to be interviewed at intervals throughout the course. Several of the candidates also shared the contents of staff/candidate dialogue journals. Additional data of a corroborative nature were gathered from discussions with the instructional staff, sitting in on large and small group sessions, and from an examination of summative course evaluation data.

Preliminary analysis of the survey data was conducted by two individuals. One person, who had acted as participant observer during the course, was able to combine survey data with individual interview data. A second investigator, an OISE graduate student and experienced school administrator from the Northwest Territories, provided a second perspective that proved valuable.³

Two separate procedures were employed to analyze 87 pre-course surveys. One investigator used an a priori framework for classifying data (see Figure 1). He analyzed each survey along three dimensions (relationships, organizational/contextual influences, and image of the role) from the conceptual model described as Figure 1. A second investigator used a grounded approach of analysis by focusing attention on candidate responses to a subset of the questions from the surveys. These were questions relating directly to entry process and career aspirations. This second procedure focused directly on the candidates' responses to specific questions as the means of identifying the factors or themes they perceived as influential to their socialization.

Once the initial analysis of the 87 surveys was completed by the two investigators using separate procedures, the themes and influences identified by the grounded approach were matched against the detailed analysis of all survey responses produced through the conceptual framework procedure. For reporting purposes, and to facilitate further analysis, the themes identified by the grounded procedure were grouped according to the four dimensions of the conceptual framework (e.g., see Table 1). In this way it was possible to compare the socializing influences identified from direct questioning in the surveys with the results of the broader analysis of all survey responses using the conceptual framework. The degree of congruence in findings from the two investigators became quite apparent.

Results and Discussion

The findings are presented in three sections corresponding to the research questions: factors that influenced decisions to pursue the principalship, factors influencing decisions to pursue training, and factors influencing decisions to enroll in a particular training course. We also attempt to address some of the questions that naturally emerge from our theoretical framework.

Factors That Influence Decisions to Pursue the Principalship

Table 1 summarizes the data relating to decisions to pursue a principalship. Ten themes were identified through the grounded analysis of a focused subset of questions and responses from the pre-course survey. A subsequent matching of these themes against the profiles generated through a second data analysis, employing the four-dimensional conceptual framework, produced no additional themes. However, the frequency with which respondents could be linked with some themes tended to be higher with the conceptual framework analysis, presumably because these analyses were based on more data (responses from the complete survey rather than a selected subset of questions).

Personal motivations, or internal processes, appear to figure prominently as key influences on decisions to pursue the principalship, a category of influence on socialization that has been relatively unexamined in previous studies. Of the 10 themes identified and grouped within the four dimensions of the conceptual framework, it became apparent that the three most frequently identified themes (challenge, interest, and responsibility) were most appropriately grouped within the internal processes dimension. Over 30% of the 87 candidates spoke in terms of “challenge” and/or “interest” as the basis for their decision to pursue the principalship. Other strongly represented themes were distributed fairly evenly across the four dimensions of the conceptual framework. For example, 22% of the candidates suggested they were in-

Table 1
Factors That Influence Decisions to Pursue the Principalship

Factor	Frequency (N=87)	
	grounded analysis	framework analysis
<i>Internal Processes:</i>		
Challenge	20	30
Interest	17	26
Responsibility	15	17
<i>Relationships:</i>		
Nominated/Asked/Encouraged	11	14
Desire to Share and Be Helpful	6	19
<i>Organizational/Contextual:</i>		
Career Advancement	7	14
To Gain Broader Experience	7	6
Make a Difference	6	15
<i>Image of the Role:</i>		
Belief I Can Contribute	12	13
Possess Appropriate Skills	10	16

fluenced by relationships with others (nominated or encouraged by others, and a desire to share and be helpful). A similar number of candidates explained their pursuit of the principalship according to their perceptions of the role, expressed in terms of a belief that they could contribute and the extent to which they already possessed the necessary knowledge and skills.

It was interesting to note that themes grouped as organizational and contextual influences (such as career advancement, broader experience, and desire to make a difference) were less well represented. Organizational arrangements and professional relationships were apparently not the strongest incentives for attracting individuals to consider school leadership roles. Of course, it is possible to argue that the Department of Education was just not doing the right things organizationally to attract principal candidates.

Comparing these findings with those reported by Duke (1988) in his study of incumbent principals produces some interesting parallels. Duke's inquiry, focused on why principals consider quitting their profession, discovered that incumbents derive considerable satisfaction from several aspects of the job. These include the diversity of tasks, the numerous opportunities to solve complex problems, and the chance to learn more about their own abilities and beliefs. It is apparent that the reasons offered by aspirants in our study for seeking a principalship are quite similar to those aspects of the role identified in the Duke study as most satisfying to incumbents. In both studies, personal perceptions of challenge and interest figure prominently as influences. This implies that some influences on socialization may remain constant throughout Van Gennep's (1960) three hypothesized stages of development (separation, transition, and incorporation). However, none of the principals in the Duke study mentioned responsibility and advancement as key motivators for staying in the role. In our study of aspiring principals these two themes were identified as moderate influences on a decision to pursue the principalship.

Ironically, Duke discovered that certain aspects of principals' work appear to produce concern and frustration at the same time as they produce satisfaction. Although both aspirants and incumbents are apparently attracted to the principalship by the rich variety of challenges to the intellect associated with the role, this same challenge of doing all the things that principals are expected to do also motivates incumbents to consider leaving the job. Duke concludes with skepticism toward the notion that the conflicts experienced by these principals could have been reduced by more effective training and socialization. He suggests that in some cases their problems were more likely functions of their personalities than of the job. Thus the irony becomes extended by the findings of our study. The internal processes that were discovered to be the strongest influence on aspirants deciding to pursue the principalship may be the same forces that satisfy current incumbents as well as cause other veteran principals to consider leaving the role.

Factors That Influence Decisions to Pursue Training

Just as decisions to pursue the principalship are apparently not heavily influenced by relationships with others, decisions to pursue training appeared to be only modestly influenced by superordinates. This is an apparent contradiction of Van Gennep's (1960) theorized importance of modeling by others at the separation stage. Findings in our study suggest that decisions to pursue

training are again most likely to be influenced by internal processes, a dimension that was not considered in either the Greenfield or the Leithwood principal socialization studies. More specifically, having decided to pursue the principalship, more than half of our respondents apparently pursue training as a way of moving toward an existing image of the role. This appears to confirm our hypothesis that some candidates possess an image of the role that may be antecedent to other socializing influences. However, it must be emphasized that the images of the role manifested by these candidates were varied, often only partially developed, and not necessarily consistent with the notions of instructional leadership.

A total of 12 themes were identified in our study as influences on candidates' decisions to pursue training for the principalship. Ten of these themes were identified by the analysis of a focused subset of survey questions and responses, that is, those relating to entry process and career aspirations. The subsequent broader analysis of all survey data, using the four-dimension conceptual framework (Figure 1), produced an additional two themes that appeared frequently enough to be included in the list. These were "professional development" and "personal enrichment."

As Table 2 illustrates, four themes were most frequently identified by the data analysis. The themes "skill development" and "pursuit of knowledge" were cited in 49 and 42 cases respectively; approximately 50% of the 87 respondents. A third frequently identified theme was "step in the career ladder." It was cited as a motivator to pursue training in 30 surveys, or approximately 33% of candidates. A final theme identified by 26 respondents was "desire to broaden or gain perspective."

When these 12 themes were grouped within the four dimensions of the conceptual framework (see Table 2) it became apparent that themes were

Table 2
Factors That Influence Decisions to Pursue Training

Factor	Frequency (N=87)	
	grounded analysis	framework analysis
<i>Internal Processes:</i>		
Desire for Knowledge	15	42
Interested	11	15
Curiosity About the Role	2	7
Professional Development	-	7
Personal Enrichment	-	14
<i>Relationships:</i>		
Collegial Contact	1	15
<i>Organizational/Contextual:</i>		
Step in Career Ladder	22	30
Present Role Complements	6	8
Desire for Training	2	15
<i>Image of the Role:</i>		
Skill Dev./New Principal	11	49
Broaden or Gain Perspective	5	26
Relevance to Present Job	4	19

again heavily clustered in the internal processes dimension, and to a lesser extent in two other dimensions, organizational/contextual factors and image of the role. As was the case for factors influencing decisions to pursue the principalship (reported in the previous section), the relationships dimension was not a particularly significant category of influence. Only one theme, "collegial contact," was identified from 15 surveys and grouped within this dimension. On the other hand, whereas organizational/contextual factors were apparently not strong influences on the decision to seek a principalship, three themes grouped in this category were identified as influences on decisions to pursue training for this educational role. These were "step in the career ladder" (30 cases), interest in specific "training" (15 cases), and present placement in a "complementing role" (8 cases). Similarly, themes related to the image of the role dimension were much more strongly represented as influences on decisions to pursue training than on decisions to pursue the principalship itself.

The heavy clustering of themes (5 of 12) within the internal processes dimension for decisions to pursue training repeats the pattern previously established for decisions to pursue the principalship as a role. In both types of decisions, personal goals or objectives figure prominently as influences. Furthermore, if these themes are ranked within a values hierarchy ranging from personal preference to values of principle as proposed by Hodgkinson (1987) (see also Begley & Leithwood, 1990), these themes also imply ethic related, or transrational aspirations for "knowledge," "professional development," and "personal enrichment." While not conclusive indicators of high psychological maturity, these themes do suggest that the candidates are not articulating personal preference orientations in the sense of pursuing training as a path to great power or wealth. Given the lack of clarity and general ambiguity associated with much of the principal's role (Duke 1988), and the demands for self-direction and leadership associated with an instructional leadership orientation (Leithwood & Montgomery, 1986), the presence of these themes is reassuring. The NWT training course appears to be attracting the right candidates, those committed to a self-directed and professional orientation to the role.

As has been previously suggested, candidates are apparently much less influenced by their relationships with others in deciding to pursue training than might be expected. The one exception was an apparent desire in 15 cases for increased collegial contact, presumably with peers. Superordinates appear to have little influence on decisions to pursue training among this group of candidates. This is something of a paradox in that NWT entry requirements for the program include the endorsement of the candidates' supervisors of schools. Furthermore, it appears to be a direct contradiction of Van Gennepe's (1960) theoretical assertion that at the separation stage of the socialization process candidates tend to compare themselves with others (Ronkowski & Iannaccone, 1989). Our data suggest that the decision to pursue the principalship and the decision to pursue training are not heavily influenced by relationships with others.

On the other hand, findings do suggest that decisions to pursue training are most likely to be influenced by internal processes. Having decided to

pursue the principalship, more than half apparently pursue training as a way of moving toward an existing image of the role. In our study more than 50% of candidates cited skill development as motivating them to pursue training. Nearly a third (26 cases) sought training to broaden their perspective, and 19 candidates saw the training as relevant to their present position. The implication for those interested in promoting principal recruitment, or encouraging individuals to pursue training, is that their best strategy may be to emphasize the organizational "career ladder" and "skill development" aspects of principal training, and the general value and applicability of the training to presently held positions. This is consistent with Van Maanen's (1984) notion of "chains of socialization," cited by Feldman (1989), which suggests that the process of organizational socialization consists of aspirants making only minor modifications in their behavior and attitudes from job setting to job setting.

Factors That Influence Decisions to Enroll in the OISE Course

Table 3 lists the themes identified as influences on the decision to enroll in the OISE developed Northwest Territories Principal Certification Course. Only four themes were identified in the initial analysis of a reduced set of survey questions. The subsequent analysis of all survey responses using the four-dimension conceptual framework produced an additional five themes.

Two themes dominated candidates' responses to these questions. Over 75% of candidates (67 cases) mentioned the receipt of financial support to attend the course as a factor in their decision to enroll in the course. Almost as many (62 cases) cited the availability of the NWT sponsored course as a positive encouragement to enroll. A third highly represented theme (38 cases) was the encouragement of others to enroll in the course. These influential

Table 3
Factors That Influence Decisions to Enroll in an OISE Course

Factor	Frequency (N=87)	
	grounded analysis	framework analysis
<i>Relationships:</i>		
Encouragement by Other Persons (colleagues, family, friends)	-	38
<i>Organizational/Contextual:</i>		
Certification Requirement	yes	16
Financial Support Available	yes	67
Prior Participant Endorses	yes	16
Availability of This Course	yes	62
Timing & Duration of Course (+ influence)	-	3
Timing & Duration of Course (- influence)	-	16
Employment Requirement	-	7
Toronto Site (+ influence)	-	1
Toronto Site (- influence)	-	8
Fees/Residence Expense (- influence)	-	7

persons included colleagues, family, and friends. Of the remaining six themes identified, only three were identified with any frequency (16 cases each). These were "certification requirement," "positive support of prior participants," and the negative aspects of "time" away from family and loss of holidays.

When the nine factors relating to enrollment in the OISE course were matched against the dimensions of the conceptual framework (Figure 1), an interesting reversal of the pattern set by the findings for the previous two research questions became apparent. As previously reported, candidates' decisions to pursue both the principalship and training were strongly linked to themes clustered within the internal processes dimension and to a lesser extent the image of the role dimension. In contrast, the decisions to enroll in a particular course developed by OISE and sponsored by the Northwest Territories Department of Education were apparently largely motivated by factors most appropriately grouped within the relationships dimension and particularly the organizational/contextual dimension.

From nine themes identified in the analysis, seven were grouped within the organizational/contextual factors dimension. Foremost as influences were the direct sponsorship and explicit endorsement of the course by the NWT Department of Education, combined with the financial support provided by the Northwest Territories Teachers' Association in the form of professional development travel funds. These were the two themes mentioned most frequently by candidates. The findings of this study suggest that financial subsidies to candidates and official sanction of the program are a winning combination of influences for those interested in promoting the training of principals in their jurisdictions.

Two additional organizational factors were apparent but less frequently identified. These were the perception that the course was a mandatory requirement for principals (7 cases) and the recent passing of territorial legislation relating to certification of principals. In 1989 legislation was passed in the Northwest Territories requiring all principals to become certificated within two years of being appointed principal. Other lesser influences mentioned by candidates were the timing and location of the course and the costs associated with fees, travel, and residence.

Although findings for the first two research questions suggest that relationships were not strong influences on decisions to either pursue a principalship or seek training, our data suggest that once a decision to pursue training has been made, the actual choice of training program can be significantly influenced by others. In the case of the Northwest Territories program, the steady encouragement provided by regional officials and incumbent principals to their subordinates (especially aboriginal educators who are currently underrepresented among school administrator ranks) appears to have had a positive impact. Similarly, the perceived quality of the first cycle of the program, as reported by the participants, appears to have positively influenced candidates to enroll in succeeding cycles of the program. Two implications may be drawn here. One is that Van Gennep's theorized orientation to others at the separation stage only became apparent in our data when candidates made decisions about selecting a training course. The influence of others on these decisions is somewhat limited otherwise. Second, a principal preservice

program perceived as being of high quality will apparently attract candidates to enroll, but only if they have decided on their own to pursue training, a decision usually based on personal motivations.

Conclusion

The findings of this study suggest that the socializing factors that most significantly influenced decisions to pursue both the principalship and training programs for that role are those motivators derived from the individuals' internal processes. For example, many aspirants are apparently attracted to the challenge of the principalship. Others report a thirst for knowledge, a commitment to acquiring professional knowledge, or a belief they can make a difference as motivators. Paradoxically, organizational/contextual factors and relationships with others appear to become important influences only much later in the process. Many incumbent principals who completed the first cycle of the Northwest Territories course in 1989 proved to be highly enthusiastic agents of recruitment for the second cycle of the course. The perception that the course and certification as a principal would soon become a territorial mandate was apparently another influence. Finally, many candidates identified the financial support provided by the teachers' federation as a significant influence on their decision to enroll in the program.

In addition to encouraging further research on the influence of internal processes in the socialization of aspiring school leaders, our hope is that this research will provide practical insights into how programs for school principals should be designed, implemented and evaluated. Further data are being collected through replications of this study using Ontario and Western Australian course candidates as subjects.

Notes

1. Two excellent examples of this trend are the recent legislation mandating a principal certification program in the Northwest Territories of Canada, and program development work currently being carried out in Western Australia for the Ministry of Education by a consortium of university faculty.
2. Several regionally specific profiles of the principalship are currently being developed by the authors: The Western Australia Principal Profile, November 1991; The Southwestern Ontario Principal Profile, April 1992; The Northwest Territories Principal Profile, May 1992. The results of these profiling processes were reported at the 1992 Annual Meeting of the American Educational Research Association in San Francisco. Copies of the profiles are available by contacting the authors directly.
3. We wish to acknowledge the contribution to data analysis made by Allan Brownridge, a graduate student in the Department of Educational Administration at the Ontario Institute for Studies in Education, Toronto, Ontario.

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Developing a Teaching Style: A Dilemma for Student Teachers

One aspect of the complex and arduous task of learning to teach is the acquisition of the pedagogical content knowledge that enables a teacher to transform particular content knowledge into forms accessible to pupils. This article describes the developing pedagogical content knowledge of two student teachers enrolled in a one-year elementary teacher education program. In particular it describes their deliberations about how to teach conversion between metric linear units and why the selection of any one teaching strategy can create confusion and anxiety for novice teachers. The student teachers' attempts to find solutions are presented in the form of several short vignettes, followed by discussion and interpretation of the observations.

Un problème particulièrement épineux dans la tâche complexe et ardue d'apprendre à enseigner est l'acquisition des connaissances du contenu pédagogique qui permettra à l'enseignant(e) de transformer les connaissances particulières du contenu en formes accessibles aux élèves. Cet article décrit le développement de l'acquisition du contenu des connaissances pédagogiques chez deux stagiaires inscrits au programme d'un an de formation de l'enseignant(e) à l'élémentaire. On décrit en particulier comment leurs délibérations progressent concernant l'enseignement de la conversion en unité métrique linéaire et pourquoi la sélection d'une stratégie entre autres, peut rendre l'enseignant(e) débutant(e) confus(e) et anxieux(se). Les solutions proposées par les stagiaires sont présentées en forme de courtes vignettes suivies de discussions qui tentent d'interpréter les observations.

Introduction

Coping with the realities of teaching during the early survival years is anything but trivial. Student teachers are attempting to develop their own styles of teaching and concurrently satisfy both external and internal validations. Externally, student teachers have to "pass the test" (Calderhead, 1987), that is, they

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have to meet the expectations of both cooperating teachers and faculty advisors. Personally, student teachers have to wrestle with the various views of teaching that they have internalized. Teaching is unique among all the professions in that novices already have been intimately involved with the process as learners in the classrooms that they now enter as teachers. Lortie (1975) estimates that American students spend approximately 13,000 hours in direct contact with classroom teachers during their public school experience. During this “apprenticeship of observation” students internalize many expectations of “what teaching is” and “what teachers do.” This observation continues on through their undergraduate and preservice programs.

During the early stages of practice teaching, student teachers have a tendency to develop a relatively utilitarian perspective on teaching in which the major criterion for success is “getting the class through the required lesson on time in a quiet and orderly manner” (Zeichner, 1980, p. 49). Once they progress past this stage, they are ready to risk experimenting with different teaching styles. However, it is only when student teachers are at the point where they start to ask “Why should I teach this way?” as well as “How do I teach?” that they progress from being a simple technician to what Schön (1987) calls a *reflective practitioner*. These particular questions are not simply general questions, but are embedded in the subject matter that people are engaged in teaching. Without the ability and desire to analyze their practice, teachers of mathematics, for example, often limit themselves to teaching for what Hiebert and Lefevre (1986) describe as *procedural knowledge* (familiarity with the formal language of mathematics and the memorization of rules and algorithms to solve mathematical tasks) instead of *conceptual knowledge* (a connected body of knowledge in which the linking of relationships is as significant as the discrete mathematical tasks). When student teachers who have learned mathematics through the memorization of rules and their precise manipulation are exposed to strategies that encourage teaching for conceptual knowledge, the conflict of how to teach can be extremely disconcerting.

This article describes the developing *pedagogical content knowledge* (Shulman, 1986) of two student teachers, how they decide to teach a mathematical topic, and why the selection of a particular teaching strategy can create confusion and anxiety for novice teachers.

The Study

The study focuses on a dilemma faced by two student teachers as they attempt to transform their understanding of a topic in mathematics, namely the conversion of metric linear units into a form that can be understood by their pupils. The student teachers’ understanding of pedagogy at this point in their career is gradually being shaped and reshaped to fit a style of teaching with which each of them feels comfortable. Often the style of teaching advocated by university faculty is in conflict with the style of teaching remembered by student teachers during their own schooling. Many student teachers remember mathematics classrooms in which the teacher *tells* and the pupils *remember*. Taking on the role of facilitator, helping learners to construct conceptual knowledge, emerges as an exciting and rewarding alternative. This style of teaching, however, involves the transformation of subject matter knowledge,

and so requires a firm grasp of various components of pedagogical content knowledge.

Student teachers' over exposure to any one particular style of teaching can prevent a critical appraisal of alternative strategies and limit their teaching. Recognition of this predicament and the student teachers' attempts to find solutions are presented in the form of several short vignettes, followed by a discussion of the student teachers' observations.

Conceptual Framework

Traditionally, the preparation of novice teachers for classrooms has focused on two broad but distinct areas: content knowledge and general pedagogical skills. For the prospective elementary school teacher emphasis has usually been placed on general pedagogical skills rather than content. Underlying this emphasis in pedagogy is the assumption that pedagogical skills are generic, that is, they are by and large independent of the content being taught. Shulman (1986) has drawn attention to the need to abandon this simplistic assumption and to pay more attention to the ways in which pedagogy and subject matter interact. To a significant degree, the intellectual expertise of teachers can be seen to lie in their ability to *transform subject matter knowledge* into forms that are accessible to their pupils. This ability relies on a teacher's awareness of those aspects of content knowledge particularly relevant to its teachability. Shulman has called such knowledge pedagogical content knowledge.

Student teachers are seldom aware of the need to transform subject matter knowledge. For them the act of teaching involves a simple transmission of subject matter knowledge—more or less intact—to their students.¹ Shulman's concept of pedagogical content knowledge would appear to have potential both for clarifying the need to transform subject matter and for assisting reflection on how to perform the transformation.

The task of learning to teach is a complex and arduous one. Unfortunately, there is little general awareness of this fact. In his Presidential Address to the American Educational Research Association, Shulman (1986) drew the attention of both policy makers and teacher educators to the inadequacy of conceptualizing the knowledge base for teaching in terms of the dual categories of subject matter and generic teaching skills. Focusing attention on the task of readying subject matter content for teaching in terms of a transformation of that subject matter knowledge, he attempted to articulate the kinds of knowledge required to perform such a transformation.

Pedagogical Content Knowledge

Shulman (1987) has drawn attention to a type of knowledge that plays a central role in the transformation of subject matter knowledge. He represented this pedagogical content knowledge as a "special amalgam of content and pedagogy that is uniquely the province of teachers, their own special form of professional understanding" (p. 8).

It goes beyond knowledge of subject matter per se to the dimension of subject matter knowledge *for teaching*. [It is that] particular form of content knowledge that embodies the aspects of content most germane to its teachability. (Shulman, 1986, p. 9)

At one level pedagogical content knowledge might be dismissed as simply better, more complete understanding of the subject matter. Such a move, however, would blur an important distinction that has considerable potential for teacher education. Almost every teacher has had the experience of uncovering new aspects of subject matter while engaged in teaching it. The well-known expression “You don’t really understand a topic until you’ve taught it” gives credence to Shulman’s view that understandings rooted in the intersection of subject matter and pedagogy are central to the task of learning how to teach. For novice teachers in particular, it is important to realize that there is important knowledge about content central to the task of preparing that content for teaching.

In order to be able to transform subject matter content knowledge into a form accessible to pupils, teachers need to know a variety of particulars about the content that are relevant to its teachability, particulars that probably would not have been revealed until the task of teaching the subject matter had been assumed. This pedagogical content knowledge is in some sense a result of the interaction of content and pedagogy. It is knowledge about the content that is derived from consideration of how best to teach it. For a particular topic, pedagogical content knowledge includes knowledge of:

1. what makes the topic easy or difficult to understand, including the preconceptions about the topic that pupils bring to their studies;
2. those strategies most likely to be effective in reorganizing pupils’ understanding to eliminate their misconceptions;
3. a variety of effective means of representing the ideas included in the topic: analogies, illustrations, examples, explanations, and demonstrations (Shulman, 1986, pp. 9-10).

There is no reason to assume that these categories exhaust the possible kinds of pedagogical content knowledge. They provide, however, a comprehensive framework for initial investigations. Student teachers are keenly aware of their need to acquire knowledge and skills in the area of general pedagogy: for example, motivation, questioning skills, classroom management. However, they are usually surprised to discover that there are many aspects of content knowledge relevant to the task of teaching that they need to acquire. This phenomenon is especially true for student teachers enrolled in elementary teacher education. The acquisition of pedagogical content knowledge is often a crucial factor in novice teachers developing the ability to communicate their knowledge to pupils. Even more important, the awareness that teachers need to transform subject matter so as to make it accessible to pupils, shifts the focus of learning to teach from the simple acquisition of a set of classroom management and knowledge transmission skills to the more demanding but intellectually satisfying task of inquiry into how pedagogy and content knowledge interact (see Figure 1).

Conceptualizing the central intellectual task of teaching as that of transforming content knowledge into a form accessible to pupils provides student teachers with a rationale for inquiring into their own grasp of content, their pupils’ prior conceptions, and plausible reasons for pupils holding these conceptions. From this perspective, the task of learning to teach becomes more than just the acquisition of a set of general pedagogical skills and strategies

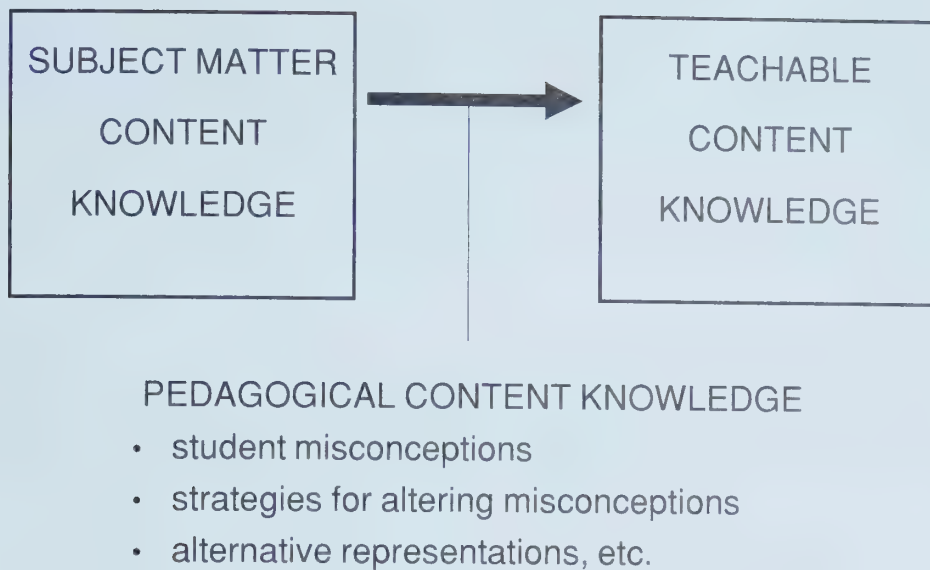


Figure 1. Transforming subject matter knowledge.

with which to transmit a fixed body of knowledge. The task of learning to teach becomes, at least in some part, an inquiry into subject matter content and its teachability. Such a stance would seem to be in tune with the reality of the complex, multifaceted, and continually changing task of the classroom teacher.

Procedural and Conceptual Knowledge

It is not possible to treat procedural knowledge and conceptual knowledge as an either/or proposition. When children learn procedures in a meaningful manner, relationships are established and the procedures are inevitably linked to conceptual knowledge. However, when mathematical procedures are learned in isolation, that is, when they are not connected to other related conceptual schema, their usefulness is severely limited. This occurs, for example, when pupils memorize the volume of a cube as $l \times l \times l$, the volume of a rectangular prism as $l \times w \times h$, and the volume of a cylinder as $\pi r^2 h$. Recognizing that all three formulae are particular cases of the more general expression: Area of base $\times$ perpendicular height, enables learners to reduce the amount of procedural knowledge that they have to store in memory, facilitates the construction of connections between the volumes of the various solids, and builds a conceptual framework that makes sense. Procedural and conceptual knowledge should inform one another, and it is an educator's understanding of the relationships between the two that assists his or her teaching of mathematics (Hiebert & Lefevre, 1986; Silver, 1986).

Methodology

The study was a naturalistic, qualitative inquiry into the developing pedagogy of two student teachers during their preservice year in an elementary teacher education program.

Name: _____

Consider an event, related to your teaching, that seems important. Do not worry about “good” language or grammar, just describe the situation as realistically as possible. If you have some second thoughts as you go along, just stick them in. Do not worry about having to stay too closely with the outline. The following categories may help you capture the details of the event.

- (a) The context:*
- (b) Your intentions:
- (c) Who was involved:
- (d) What you did:
- (e) What happened as a result:
- (f) How did this event make you rethink your views of teaching, learning, students, subject matter, etc.:
- (g) Other comments, such as expectations for the future, predictions, what was learned, and so on.

*The form consisted of both sides of an 11 x 8.5" sheet of paper with spacing after each subheading for the student teachers to summarize the critical incident.

Figure 2: Critical teaching incident sheet.

Data collected from the student teachers consisted of interviews, field notes and recordings of class teaching, and critical incident sheets. Interviews that took place prior to and following observed lessons were audiorecorded and transcribed. Further information was collected following the student teachers' submissions of critical incident sheets. These critical incident sheets were adapted from Miles' (1990) procedure for gathering data for vignettes (see Figure 2). The student teachers were requested to complete critical incident sheets for events that they considered to be significant in their professional development. The critical incident sheets were then analyzed and interviews arranged to expand and clarify the details and significance of these incidents to the students' professional growth.

The vignettes provide a means for documenting and inquiring into the knowledge growth of novice teachers (Shulman, 1987). The incidents that these vignettes capture and the subsequent analysis add to our understanding of teaching by illustrating the dilemmas faced by novice teachers as they attempt to transform content knowledge into forms that their pupils can understand.

The Student Teachers

The vignettes that follow focus primarily on Mary,² a confident 24 year old woman who had worked for a year after completing her honors undergraduate psychology degree prior to entering our one year elementary teacher education program. Although Mary had completed a calculus course in high school and several statistics courses in university, she readily acknowledged that she did not enjoy mathematics and felt anxious about teaching the subject. She explained that she “never remembered liking it [mathematics] or really remembering it.” For Mary, math was “something that I can remember being drilled into me—like it was for a test and no other reason.”

June was Mary's teaching peer.³ She was 23 years old and had entered the faculty of education after completing her honors undergraduate degree in physical education. June enjoyed mathematics. While in high school she had successfully completed an academic mathematics program. In university, however, she had had no reason to continue her mathematics education. She was secure in her own mathematical ability, but on several occasions indicated that she found it difficult to understand why some children were unable to grasp rudimentary mathematical concepts. June felt that "coming down to the children's level" would be her most difficult task in teaching mathematics to elementary schoolchildren.

The Setting

Mary and June had been placed in the same grade 5 classroom for their three-week practicum. This session was their second practicum experience. The first had been a four-week block in a grade 2 classroom. The mathematics unit, which they were to complete over the three week period, was measurement. They had spent considerable time planning the unit and had organized it so that the children would be engaged during the first week at a variety of self-directed activity centers involving linear measurement. Instructions for each center were written on cards and the pupils worked in heterogeneous ability groups, attempting to solve the problems cooperatively. While the children worked at the activity centers, the student teachers acted as facilitators, interacting with individuals or groups as the need arose. For the final two weeks of the unit, Mary and June had planned to follow a more traditional approach. The mathematics lessons would continue to embrace the notion of linking conceptual and procedural knowledge, but would be more teacher-directed than the learning centers had been. Topics to be included were "conversion between metric linear units," and the "concepts of area and volume."

The Dilemma

Mary and June's dilemma first surfaced after their pupils had completed the self-directed activity centers on linear measurement and June had taught the first teacher-directed lesson dealing with metric conversion. On entering the practice teaching classroom during a lunch break, their faculty mathematics instructor found Mary and June at the chalkboard engaged intently in a discussion with their cooperating teacher. They were all concerned with the apparent inability of the pupils to convert from one metric linear unit to another. On the worksheet that June had prepared, involving elementary conversions such as $5\text{m} = __\text{cm}$, the pupils had made numerous errors. From one point of view this should not be surprising. As Shulman (1989) has pointed out, knowing grade 5 subject matter is not "trivially simple" (p.9). It was necessary for Mary and June to comprehend their pupils' learning processes, the typical understanding of their grade 5 pupils, common errors their pupils might have acquired, and concepts that are difficult or easy for grade 5 pupils (Marks, 1990). Mary and June also required a repertoire of pedagogical representations (metaphors, analogies, examples, stories, demonstrations) that could assist pupils in connecting what they already knew to what they were about to learn (Shulman, 1989), and consequently help the pupils construct their own representations for the mathematical abstractions.

Mary had to teach the next lesson on metric conversion and was unsure how she should proceed. If she simply presented the pupils with a list of procedural rules and drilled them in the use of these rules, she was afraid that she would be promoting the same negative reaction towards mathematics that she had herself developed in elementary school. However, she was becoming increasingly frustrated with the results of the approach advocated by her faculty mathematics instructor. As Mary wrote later:

I found that it was difficult to compromise my new views about presenting mathematical concepts with my old memories about how I learned the same material. Perhaps I was surprised and even a little annoyed at how much my own education may influence how I now educate (or attempt to educate!) others. I intended to let or allow students to discover or develop the concept of metric conversions on their own as much as possible. What interfered with this intent were time constraints and the relative difficulty of this approach as opposed to simply presenting the “rules” for students to follow and apply.

The difficulties inherent in teaching mathematics meaningfully, the time constraints involved in covering the content of the curriculum, and the need to cope with individual differences are all factors that are not unique to Mary’s situation. Mary wondered how it was possible to teach for conceptual understanding within the everyday constraints of teaching. Mary’s attempt to manage her dilemma (Lampert, 1985) and her reflections on that process are now discussed.

Searching for a Solution

Two questions seemed central to dealing with Mary’s difficulties:

1. How was she to manage her internal conflict?
2. How should she plan to teach metric conversion effectively?

How was Mary to Manage her Internal Conflict?

Should Mary select a style of teaching that epitomizes her unpleasant memories of mathematics but that she thinks might be effective, or a style that she agrees with in theory but that seems to be proving ineffective?

Initially Mary had rejected the method by which she remembered being taught, that is, drill and rote memorization, in favor of a more meaningful approach. Two elements had led to this decision. Mary felt that her own mathematics education had resulted in her dislike and anxiety toward mathematics. However, of greater significance was the emphasis in her teacher education program on teaching for conceptual understanding. Consistent with this emphasis had been a focus on the need for children to be active participants in the learning process rather than passive receivers of knowledge.

I don’t know if it’s the faculty or it’s just the way ... you just hear it and hear it and hear it. Like it’s not just in math, you hear it in English. You know, everything’s child centered and active and manipulation.... So I think you say, well, this is the way it is now.

Mary’s experiences during her first practicum had supported the message she had been receiving at the faculty. Being an active participant rather than a passive receiver of knowledge enhanced learning.

I mean it's not that I don't agree with it [the faculty approach], and I'm just accepting it blindly. I mean, when you go out there [to the schools] you really see that it's having a great effect on how kids are learning.

Prior to the lesson in question, Mary's new belief in the importance of active learning and the development of conceptual knowledge had prevented any consideration of using the strategies employed during her own schooling. Mary's frustration with her pupils' inability to convert from one metric unit to another, however, forced her to search for alternatives. Yet the mere consideration of teaching in a manner similar to the way in which she had been taught disturbed her.

At one point, I actually found myself defensive about the fact that I actually thought about teaching conversion in a way very similar to the way I was taught.

At first one might link this phenomenon to that of children who refuse to listen to the same music or dress in a similar fashion to their parents. However, Mary's rationale for not teaching as she had been taught was carefully considered. She had not really understood mathematics. She had memorized rules to give back on a test. Now she felt anxious about mathematics because she had forgotten many of these rules, and the subject involved only unpleasant memories for her.

After sharing her thoughts with her peer, cooperating teacher, and faculty advisor, and reflecting more deeply on her own school experiences, Mary came to see her own school mathematical experience in a different light. While she had developed some negative attitudes toward mathematics and often did not understand why certain mathematical procedures worked, she could usually execute those procedures accurately. In fact, after some review her old proficiency returned. Clearly, her own mathematics education had not been a complete failure. As a result she no longer felt compelled to discard all the strategies that had been used to teach her mathematics.

You know, there are benefits to the way we've been taught, because we're not stupid.... I think that as today's educators, we have to (or at least I have to) accept the fact that our [own previous] education will affect our teaching from time to time, often without us realizing it. As long as I am willing to admit this, I think I can use my education experiences to better my teaching practices. Just because I have been educated as a teacher NOW does not mean my experiences as a student, good or bad, are erased.

In order to reflect critically on her own teaching, Mary had to call into question not only her school experiences, but also the approach being advocated in her teacher education program. Coming to this realization made it possible for Mary to assess her alternatives. She realized that the extreme guilt she had felt for employing a strategy used by one of her former teachers was unwarranted. Also, she realized that she need not accept blindly the approaches advocated by the faculty. Instead, what she needed to do was assess carefully the strengths and weaknesses of various possible approaches and then examine how they might be adapted to meet the specific needs of her pupils. She was becoming aware that it is only through the integration of

knowledge from many different sources that teachers can begin to plan an effective curriculum.

How Could Mary Plan to Teach Metric Conversion Effectively?

Prior to the realization of Mary's conflicting feelings, she and her peer June had developed a number of metric measurement centers and facilitated their pupils' progress through these centers. June had then taught a more traditional lesson on conversion using a worksheet to assess the pupils' understanding.

During the noon-hour break following June's lesson, both student teachers expressed dissatisfaction with the level of their pupils' understanding. The children were having difficulty and most were confused. June herself was confident in her ability to convert from one metric unit to another. She could multiply or divide by the appropriate power of 10 and move the decimal point accordingly. The strategy had little meaning for her pupils, however, and June had been unable to develop an alternative strategy during the lesson.

I did the first few and then let them try it [the worksheet], and they didn't understand it. So I tried to re-explain it using some of the numbers on the sheet to show them ... moving the decimal and you know, you're not supposed to move the decimal point,⁴ but on the chalkboard it's easier to just move the decimal.... I couldn't think of any other ways to do it. You know, I explained in different words and I changed the numbers.

Mary explained that June had spent "most of the 30-40 minutes talking to them [the children] and they just didn't get it ... after June's lesson, she was confusing herself talking!"

In an attempt to assist the children's procedural understanding Mary developed the chart below to use during the next lesson. The function of the chart was to help students determine which multiple of 10 to use and whether to multiply or divide when converting units. For example, when pupils had to convert from millimeters to meters, they would count the number of *teeth* on the chart between the given units (in this case three) to determine the power of 10 ($10^3=1,000$). Then, because they were moving up the chart, they would

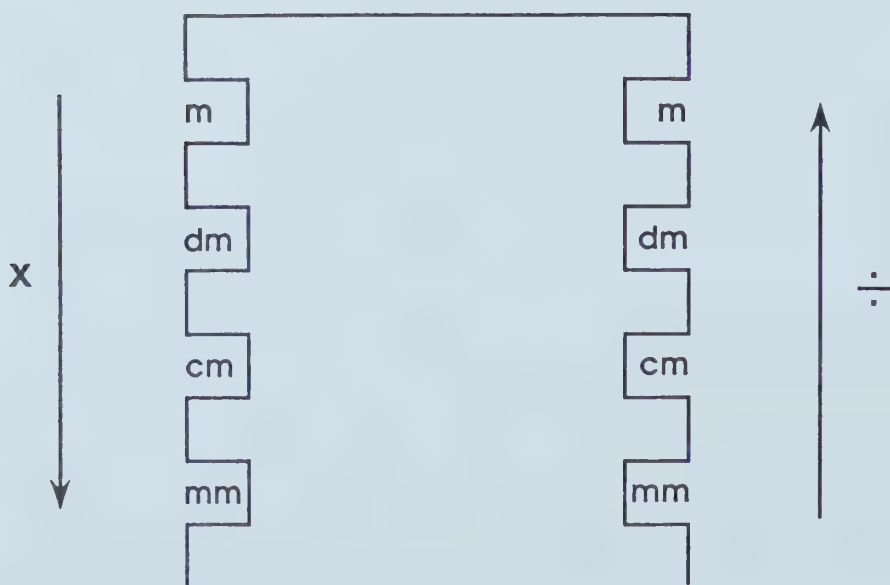


Figure 3. Mary's tooth conversion chart.

divide their original number of millimeters by 1,000 to obtain the correct number of meters. Similarly, when pupils had to convert from meters to centimeters, they would count down two teeth and so would multiply by 10^2 or 100.

Mary remembered being given a similar chart at school that had enabled her to convert metric units easily and correctly even though it was rule based. However, she was also cognizant of the need to provide pupils with more than just rules if they were to understand the procedure.

I just didn't want to put up the chart.... I think it relieves the students of the necessity to think about what they are doing.

Mary was attempting to provide an experience that linked procedural and conceptual knowledge, while completing her lessons in what her associate teacher considered to be a reasonable period of time. Later, when Mary was asked about the usefulness of the chart, she indicated that she felt it had served its purpose, but that it had been a slow process.

It took the full 40-minute period to go through it, and I just took that 40-minute period because I felt it was important.... It seemed to be a very slow process and I seemed at times to be going over it maybe too much. But I really wanted them to get certain points about it ... that it was not simply a rule, it was something to guide them, and to bring out the patterns of what they were really doing.

It is interesting that although Mary was the peer with the least confidence in her mathematical understanding, it was Mary who articulated what appeared to be the major conceptual obstacle faced by the pupils:

like you're going from a smaller number to a larger number but from a larger unit to smaller unit.

Mary recognized that the pupils had a tendency to multiply when they should have divided, and divide when they should have multiplied. In converting 700 centimeters to meters, several pupils wanted to multiply because as they said, "Meters are larger than centimeters." Knowledge of the conceptual obstacles hindering children's understanding is an important component of pedagogical content knowledge. Unless teachers are aware of such obstacles they are unlikely to recognize what makes the understanding of mathematics difficult. However, while being cognizant of a pupil's difficulty is a necessary prerequisite to finding an appropriate teaching strategy, the identification of the difficulty does not automatically yield a teaching strategy that provides the desired understanding.

Mary was disappointed that the pupils' experiences at the measuring centers had not provided them with the conceptual base for understanding the symbolic manipulation.

Mary: They were all converting in the centers before we ever mentioned the word conversion, but they didn't know it.

Interviewer: Why do you think their work at the centers didn't help them with the worksheet?

Mary: I think they were understanding it from the centers, but they didn't understand they were doing conversion.... We had a couple of things where we asked for things in centimeters,

decimeters ... and they would just measure it separately each time.... I mean in a sense that's conversion.... It's not just saying, okay measure it in millimeters and then without the measuring instrument do it in centimeters and decimeters.

Interviewer: What if you had said to them, "Measure this in centimeters" then said, "Tell me what would it be in millimeters?" Would they have been completely lost?

Mary: I don't think so because a lot of them were doing that anyway.

Interviewer: But they didn't relate it to the symbolic work.

Mary: No, they didn't seem to. I didn't grasp any evidence of it anyway.

Interviewer: Perhaps that was part of the difficulty—that they couldn't relate the worksheet to what they'd been doing at the centers.

Mary: Yes. And I wonder now ... our worksheet was simply ... so many centimeters equals so many millimeters. And then the next line, so many decimeters equals so many.... If we just used a sheet that we had used at the centers ... whether that would have been it, because they would have. Oh yes, okay! I know I can do this.

Relating the symbolism of the worksheet to the pupils' previous experiences is crucial if pupils are to establish suitable representations for mathematical abstractions. Mary was beginning to understand how she could make the symbolic work more meaningful.

During the interview subsequent to the lesson, June had mentioned "baking" as a possible source of representations to assist the pupils' understanding of metric conversion. After some deliberation, however, she was still dissatisfied with the manner in which it illuminated the underlying concepts involved in metric conversion. On the other hand, when her faculty mathematics instructor suggested using money, June had a flood of ideas.

I think that would probably be good because you could use the pennies, and the dimes and the loonies [one dollar coins], and, you know, \$10 bills if you really wanted.... Monopoly money I think I would use. Yes, that's good. That would probably be good to help them. 'Cause I know they can all do it, and I never even thought of that one [money].

Because of the pressure of time Mary and June were not able to develop their new ideas during this practicum. However, they had engaged in serious reflection about how to teach metric conversion, which would no doubt influence their subsequent teaching.

Making Connections

Student teachers do not necessarily understand how to help pupils make connections between abstract symbols and the concrete learning experiences provided by activity centers. An early teaching experience of one of the authors provides a vivid example of this predicament. He remembers being introduced to Dienes' base 10 materials and thinking they would solve many of the difficulties his pupils had been having understanding the regrouping process associated with addition and subtraction. His grade 3 pupils were very happy and successful adding and subtracting with the base 10 materials, yet performed abysmally when they moved to similar paper-and-pencil cal-

culations. At the time he thought he had a poor class. Later, he realized that his pupils had an inexperienced teacher who had been unable to recognize the importance of transforming his knowledge into a form the pupils could understand.

This realization of his own limitations had occurred a few months later while attending a mathematics workshop. When he challenged the presenter on the benefit of using concrete materials, she asked him if he was helping the children move from the materials to the paper and pencil calculations. He had assumed the transition to be obvious, but why should pupils implicitly understand that the numeral 2, written in the 10s column, is equivalent to two of Dienes' 10 rods? The pupils, of course, had been performing two discrete acts (one with the materials, the other with pencil and paper) and did not recognize the connection between the two. The connection had to be made explicitly by having the pupils record and discuss the abstract symbolism while working with the concrete materials. Once the connection had been made apparent, the symbolism became comprehensible and the children used the materials as useful representations in facilitating their understanding of addition and subtraction.

It is the responsibility of faculty instructors and cooperating teachers to help student teachers develop suitable representations for the mathematics they will teach and offer guidance in bridging the gap between concrete materials and the symbols they represent.

Children have the potential to understand mathematics if given opportunities to develop connections between symbolic mathematics and appropriate representations. When pupils cannot provide a representation for an abstract mathematical concept, teachers need to be wary of the pupils' true understanding and give them the time to explore the concept further. If teachers cannot provide the representations that elucidate mathematical abstractions, it is their responsibility to search out such representations, whenever they exist, and use them to assist understanding. When one cannot provide a representation for mathematical symbolism then, generally, one does not truly understand what the symbolism represents (Onslow, 1991).

With guidance, Mary and June were able to find suitable representations that had potential for transforming their content knowledge into a form that would make it accessible to their pupils. However, without support, it is not surprising that new teachers often become frustrated with this difficult aspect of teaching.

Conclusion

Can faculty advisors and cooperating teachers help student teachers construct their own ways of knowing? Being themselves rather than cloning their supervisors is a difficult task for new student teachers. It is only with understanding and support that they will be able to meet the challenge successfully. No one correct teaching strategy is suitable for every teacher or every pupil. Many experienced teachers adopt an eclectic approach, drawing on various philosophical paradigms. Rather than being dichotomous, teaching strategies should be part of a mosaic where the pieces blend into one another to meet the many and varied situations of classroom life. Becoming knowledgeable about and comfortable with this aspect of pedagogy was an important insight in

Mary and June's development. Their experience led them to realize that it is unwise to reject any one particular style completely. "A larger and more flexible vision need not result in a rejection of traditional or familiar ideas and practices" (Feiman-Nemser & Buchmann, 1985, p. 63).

When student teachers are confronted with their faculty instructor's and cooperating teacher's beliefs and expectations over a short time span, there is little opportunity for reflection and discussion. New ideas can be accepted quickly and with enthusiasm. Yet these new ideas will probably be dismissed with similar speed if they do not produce the expected results. Student teachers need time and support to understand the intricacies of new ideas. Transforming content into a form that makes it accessible to children is anything but trivial. Developing pedagogical content knowledge involves many years of experimentation and reflection. In the reality of schools, teachers typically perform this task in isolation (Lortie, 1975). Consequently, it is important that teacher education provide student teachers with opportunities to practice their craft in a self-critical yet supportive environment where they can learn to recognize for themselves the complexities of the task and begin to learn how to deliberate on the various alternatives.

Student teachers have to meet the expectations of their faculty advisors who supervise them throughout the year, and cooperating teachers who supervise their individual practicum sessions. Receiving a poor teaching report is likely to limit a student teacher's prospects for employment. Consequently, it is naive to ignore the influence these people have on a student teacher's decision of how a particular lesson should be taught. Student teachers, like everybody else, want to be successful. When we consider the background and educational experiences of our student teachers, we should not be surprised that they are uncomfortable with the task of attempting to link conceptual and procedural knowledge. Helping pupils make connections between mathematical symbolism and suitable concrete representations is difficult to accomplish.

The attitude of faculty and cooperating teachers will greatly influence a student teacher's development. If the practicum is one of reflective inquiry in which all participants are searching rather than telling, and recognizing the many facets of teaching rather than holding one perspective sacrosanct, the practicum can be a beneficial experience. If student teachers perceive their role as conforming to one particular style, however, little will be achieved. Reflective practice in which student teachers critically analyze what they are teaching and why they are teaching it enables the student teachers to develop professionally rather than simply technically. Recognizing the important yet difficult task of assisting children in constructing representations for abstract symbolism is an essential aspect in the evolutionary development of a novice teacher's pedagogical content knowledge.

We have attempted to tell Mary and June's story using their direct quotes but with our own interpretations of their words and actions (Hall & Grant, 1991; Gudmundsdottir, 1991). Different readers will no doubt have different interpretations of the events and of our analysis. If one truly believes that every learner constructs his or her knowledge and reads each case through a different lens, then this aspect is a strength of case study research.

Notes

1. Considerable research has demonstrated that this transmission mode of teaching has been and continues to be the dominant mode of classroom instruction (see, e.g., Gallagher & Tobin, 1987; Kilbourn & Roberts, 1984; NCTM, 1991).
2. All names are pseudonyms.
3. Mary and June were part of a special project and became exceptional student teachers. They were paired with one another for each of their first two practica. This peer support provided the opportunity for student teachers to observe one another and discuss their rationale for teaching a topic in a particular fashion. The peer provided another dimension for Schön's (1987) *reflective conversation with the situation* (p. 42).
4. In the students' mathematics methods class, their faculty instructor had explained why moving the digits rather than the decimal point is a more logical process and encourages understanding rather than rote memorization.

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Effective Leadership for School Reform

This study examined the relationship between school leadership and school improvement outcomes within the conceptual framework of the transformational and transactional leadership model advanced by Bass (1985; Bass & Avolio, 1988, 1990). Multivariate analyses were applied to survey data obtained from 679 teachers representing 256 elementary schools in a school improvement program. A two-factor model was supported in which transformational leadership proved to be the more dominant construct. Transformational leadership influenced all school outcomes except teacher effects. Transactional leadership influenced teacher effects favorably and school effects unfavorably. The implications of these findings in terms of leader and teacher power and their contradictory effects on school outcomes are discussed.

Cette recherche examine la relation entre le leadership d'une école et les résultats de l'amélioration scolaire en utilisant le cadre conceptuel d'un modèle de leadership transformationnel et transactionnel proposé par Bass (1985; Bass & Avolio, 1988, 1990). Des analyses statistiques multivariées ont été effectuées sur des données de sondages obtenues de 679 enseignant(e)s représentant 256 écoles primaires qui participaient à un programme d'amélioration scolaire. Les résultats indiquent une préférence du modèle à double aspect où le leadership transformationnel prédominait. Le leadership transformationnel influençait tous les résultats scolaires sauf celui d'effets sur les enseignant(e)s. Tandis que le leadership transactionnel influençait favorablement les effets sur les enseignants, il influençait défavorablement les effets scolaires. Les implications de ces résultats en fonction de leader et de pouvoir d'enseignant(e) ainsi que de leurs effets contradictoires sur les résultats scolaires y sont discutées.

Studies of exemplary schools have revived interest in the contribution made by effective leadership to school reform. Beare, Caldwell, and Millikan (1989) boldly asserted that "outstanding leadership has invariably emerged as a key characteristic of outstanding schools. There can no longer be doubt that those seeking quality in education must ensure its presence and that the development of potential leaders must be given high priority" (p. 99). However, the characteristics of outstanding leadership in schools are less obvious.

School leadership emerges from a variety of sources; it is not the prerogative of the principal. However, the principalship has been recognized as a critical element in school improvement and reform (Fullan, 1991; Sashkin, 1988). Acknowledgment of the impact of principals' leadership behaviors on school outcomes has generated an extensive body of research over the past decade (Leithwood, Begley, & Cousins, 1991). However, the thorough review of empirically based studies on the principalship conducted by Leithwood and his colleagues (1991) has revealed significant limitations to our current knowledge. This review identified three major areas of principals' influence

that need further empirical investigation: (a) principals' impact on a wider set of student outcomes than has been studied to date; (b) principals' impact on teacher outcomes associated with their growth and development; and (c) principals' influence on the school environment as a whole. This study addressed principals' influence on these areas using teachers' perceptions as a measure of school change.

Conceptual Framework

The transformational and transactional leadership model (Bass, 1985; Bass & Avolio, 1988, 1990) offers a range of leader behaviors that have been shown to promote change and desired outcomes outside of educational settings (Bass, 1985; Waldman, Bass, & Einstein, 1987; Yammarino & Bass, 1990). The proponent of this model, Bass, has advocated transformational leadership for successful organizational change and improved performance.

The transformational leader is one who motivates followers to perform above expectation. This transformation of performance expectation, based on a level of confidence in one's ability to achieve designated outcomes, can come about in any one of three interrelated ways (Bass, 1985; Bass & Avolio, 1988):

1. raising followers' levels of awareness regarding importance and value of designated outcomes and ways of achieving them;
2. influencing followers to transcend their own self-interest for the sake of the team, organization, or some greater mission;
3. altering followers' levels of needs or expanding followers' existing needs and wants.

Three factors determine the behavioral components of transformational leadership and define it (Bass, 1985; Waldman et al., 1987).

Charisma/inspiration. This is the degree to which the leader creates enthusiasm in followers, sees what is really important, and transmits a sense of mission to the organization. The leader inspires loyalty and devotion, instills pride and faith, and commands respect. Followers place a great deal of trust and confidence in the leader's vision and values, develop intense feelings about the leader, perceive the leader as a role model, and want to identify with him or her (Bass, 1985).

Intellectual stimulation. This is the degree to which the leader provides intellectual and problem-oriented guidance. The leader arouses followers to think in new ways (Bass, Waldman, Avolio, & Bebb, 1987). Followers are encouraged to question their own and others' assumptions, beliefs and values, and develop independent problem solving capabilities.

Individualized consideration. This is the degree to which the leader is concerned with the individual needs of followers (mentoring). The leader responds to individual differences in followers' needs for growth and development, elevating needs and abilities to higher levels when appropriate, and delegating projects to stimulate individual learning experiences. Followers are provided with coaching and teaching as needed.

The transactional leader is one who motivates followers to perform at their levels of expectation and to achieve satisfaction of basic needs. Transactions are at the heart of the interchange between leader and followers. Followers' efforts depend not only on their levels of confidence or expectations that an

outcome can be achieved through their performance, but also on the extent to which their self-interest is served. The transactional leader (Bass, 1985):

1. recognizes followers' needs and wants and establishes appropriate contingencies for performance;
2. exchanges rewards and promises of reward for followers' efforts;
3. is responsive to a follower's immediate self-interest if it can be met through getting the work done.

Two factors determine the behavioral components of transactional leadership and define it (Bass, 1985; Waldman et al., 1987).

Contingent reward. This is the degree to which the leader makes clear what the follower must accomplish in order to be rewarded. The leader provides rewards if followers perform in accordance with contracts or expend the necessary effort to meet performance standards. Clarification of goals, work standards, and assignments is emphasized. Leaders recognize what subordinates need and, through extrinsic rewards, energize followers to reach objectives.

Management-by-exception. This is the degree to which the leader provides negative feedback for failure to meet agreed-upon standards. The leader avoids giving directions if the old ways are working and allows followers to continue doing their jobs as always if performance goals are met. This is the less active form of transactional leadership. The leader intervenes only when standards are not being met.

Bass (1985) contended that most leaders exhibit both transformational and transactional leadership, in varying degrees. Transformational leadership augments transactional leadership by focusing on the development of followers as well as addressing the goals of the leader, follower, group, and organization (Bass & Avolio, 1990). For Bass, the success of a transformational leader is demonstrated both by increased performance outcomes and the degree to which followers have developed their own leadership potential and skills.

Avolio and Bass (1988) asserted that, unlike transactional leaders who work within the existing organizational system, transformational leaders change the system to recreate their environment. Transformational leaders come into their own in times of growth, crisis, and reform. Burns (1978) described reform leadership as exacting and, by its very nature, transformational. Transformational leaders tend to separate from the environment and create change (Zaleznik, 1977), whereas transactional leaders tend to work within the system to preserve the status quo.

Purpose of Study

Bass's model of transformational and transactional leadership has a number of implications for the current reform movement in education. According to the model, principals exhibiting transformational leadership behaviors will be more effective in bringing about desired outcomes, such as faculty development, improved teaching and learning, collaborative decision making, and responsive and innovative environments, than those exhibiting predominantly transactional leadership behaviors. Schools with predominantly transformational leadership are expected to be purposeful and collaborative, with a greater number of staff and faculty operating in an empowered and leaderlike

way, than those with predominantly transactional leadership (Bass et al., 1987).

Arguments linking school improvement with transformational leadership are compelling but lacking in empirical support (Hoover, Petrosko, & Schulz, 1991; King, 1989). The few existing studies (Hoover, 1988; King, 1989; Kirby, 1991) that have applied Bass's model to school settings have used perceptions of leadership effectiveness and follower satisfaction as measures of leadership outcomes. This study took the important step of addressing the impact of Bass's model on broader school outcomes within the context of a school improvement effort.

Bass's model was tested in two ways: (a) whether there is evidence for Bass's two constructs when considered in isolation using only the teachers' perceptions of leadership characteristics in their school; and (b) whether there is evidence for Bass's two constructs when examined in operation as explanatory constructs to influence the effects of leadership on teachers' perceptions of the working of the school as well as leadership characteristics. Both analyses are necessary to support the validity of Bass' model since the former considers one aspect of the validity of the model, namely the extent to which the characteristics of the leadership of principals group to form the two constructs, while the latter not only considers this aspect but also examines its utility in operation.

Survey Data

The British Columbia Ministry of Education introduced in 1989 a wide-ranging school reform policy that focused on the first three years of schooling. The policy, entitled The Primary Program, was developed in response to recommendations of the Sullivan Royal Commission Report (Royal Commission, 1987-1988). This school improvement project, referred to as The Primary Project, had in 1991 concluded its first year and began the second year of implementation of this policy. Survey data measuring perceptions of school personnel on a number of aspects of The Primary Project were collected by the Center for Principal Development, Ontario Institute for Studies in Education, University of Toronto. Access to this data base enabled this research to be carried out.

Method

Variables in Study

The two latent constructs of transformational leadership and transactional leadership were viewed as independent variables and were hypothesized to be represented by observable characteristics. Transformational leadership was hypothesized to be represented by three variables: charisma/inspiration, intellectual stimulation, and individual consideration. Transactional leadership was hypothesized to be represented by two variables: contingent reward and management-by-exception.

Four outcomes were chosen to represent the school improvement dependent variables. These were school effects, teacher effects, program and instruction effects, and student effects.

School effects. This variable encompasses perceived changes from the school improvement process impacting on the school as a whole and related to the functioning, climate and direction of the school.

Teacher effects. This variable encompasses perceived changes from the school improvement process impacting on teachers.

Program and instruction effects. This variable encompasses perceived changes from the school improvement process impacting on school programs and instruction.

Student effects. This variable encompasses perceived changes from the school improvement process impacting on students.

It was unclear whether these observable outcomes were associated with one or more than one latent construct associated with school improvement.

Operational Definition of Variables

The dependent and independent variables were operationally defined by a process of clustering items from the survey to reflect their conceptual definitions. Items from the survey were categorized by Bass and the author into subscales representing the three hypothesized behavioral components of the transformational scale and the two hypothesized behavioral components of the transactional scale. Ambiguous items were excluded. Decisions made on the basis of Bass's model resulted in the clustering of 13 items for charisma/inspiration, three items for intellectual stimulation, six items for individual consideration, three items for contingent reward, and three items for management-by-exception.

The survey also provided items that operationally defined the four scales measuring outcomes of the improvement process (school effects, teacher effects, program and instruction effects, student effects). To verify the validity of the items forming these clusters, five experienced school personnel were given definitions of the four outcome variables and asked to categorize every item in this section into one of these four scales. Only those items were used on which there was 80% agreement. Items that were difficult to categorize were excluded. Five items were identified as representing school effects, eight items for teacher effects, five items for program and instruction effects, and 10 items for student effects. The operational definitions of the variables represented by the items selected from the survey and their conceptual definitions are listed in Table 4.

Sample

Schools to be surveyed were stratified by size and randomly selected. An estimate was made of the number of elementary staff in each school and packages of the Primary Program Survey were sent out requesting that the completed survey be returned by mail. A total of 2,547 questionnaires were mailed to schools; the individual response rate was 30% and the school rate was 67%. The low response rate for teachers was at least partly due to considerable political instability in the province at the time of the survey as well as related teacher industrial action in many districts. Responses from 770 individual staff were returned: the 74 responses from principals were automatically excluded from this study and a further 17 responses were not usable because the respondents did not identify their position in the school. A sample

of 679 individual responses representing 256 schools remained. This provided a more than adequate cases-to-variables ratio for the analyses undertaken. Table 1 summarizes the population, the selected, and the achieved sample by strata.

The sample employed was a probability proportional size random sample of school districts with a sampling fraction of approximately one third. In a second stage, schools were sampled from within the chosen districts. Because a cluster sample of schools within districts was employed, and not a simple random sample of schools, the number of schools responding cannot appropriately be used in the significance tests applied to the analyses carried out. As a consequence, it was necessary to examine the *F* values obtained and their levels of significance with caution. The data obtained from the individual teachers within schools were aggregated to the school level in analysis.

Source of Leadership

Of responders 73.4% included the principal as at least one of those providing leadership in the school regarding the Primary Program project; this included 35.2% who identified the principal as the sole provider of leadership. Thus 26.6% did not identify the principal as providing leadership outside of leadership teams and committees. This supported the view of the principalship as a major source of leadership contributing to the school improvement process, although not always the sole source.

Research Design

This study employed a correlational design using factor analysis and canonical analysis models to determine the relationships between transformational and transactional leadership behaviors, and school improvement outcomes. First, confirmatory factor analysis was employed to test the two-construct model. Then canonical correlation was used to examine the relationship between the set of dependent variables (school effects, teacher effects, program and instruction effects, student effects) and the independent variables (charisma/inspiration, intellectual stimulation, individual consideration, contingent reward, management-by-exception).

Results

The logical allocation of items to scales on the basis of Bass's model of leadership was tested against the interrelations of items obtained empirically. Two

Table 1
Summary of Survey Population, Sample, and Respondents
by Sample Strata

<i>Strata</i>	<i>Population</i>		<i>Sample</i>		<i>Respondents</i>	
	<i>Districts</i>	<i>Schools</i>	<i>Districts</i>	<i>Schools</i>	<i>Districts</i>	<i>Schools</i>
Small	44	269	14	96	13	65
Medium	23	501	7	154	7	99
Large	8	400	4	156	4	108
Total	75	1,170	25	406	24	272

methods of analysis were used; first, Cronbach alphas were calculated to measure the internal consistency of the scales; and, second, a confirmatory factor analysis to test validity of the model and scales by comparing the empirical factors generated by the survey with the constructed factors.

Internal Consistency of Scales

Cronbach alphas were calculated for each of the five independent variable scales and the four outcome measures as well as the composite scales of transformation, transaction, and effects (composite of the four outcome measures). These findings are presented in Table 2. Internal consistency for all the variables ranged from 0.92 to 0.55. The lowest alpha computed was for the independent variable scale of contingent reward (0.55), which contained only three items and was the least consistent of the independent scales. Composite scales of transformation (charisma/inspiration, intellectual stimulation, individual consideration) and effects (school effects, teacher effects, program and instruction effects, student effects) had alphas >0.9. A computed alpha of 0.25 for transaction indicated that grouping together items from the contingent reward and management-by-exception scales did not form one single coherent and reliable composite scale.

Table 3 presents correlations among all the scales. Contingent reward and management-by-exception were negatively correlated (–0.30) indicating that leadership high on contingent reward was associated with low management-by-exception. Contingent reward correlated with both the transformation (0.69) and transaction (0.45) scales and therefore was not of itself a consistent contributor to the transactional scale. Management-by-exception correlated negatively with all other scales except transaction (0.73).

Confirmatory Factor Analysis

Bass’s model suggests a structure consisting of two broad constructs represented by transformational and transactional leadership. Confirmatory factor analysis on the data showed the actual factor structure that emerged from a

Table 2
Internal Consistency of the Constructed Independent and Dependent Variable Scales

Scale	No. of Items	Cronbach alpha
Charisma/inspiration	13	0.92
Intellectual stimulation	3	0.85
Individual consideration	6	0.86
Contingent reward	3	0.55
Management-by-exception	3	0.77
School effects	5	0.76
Teacher effects	8	0.83
Program and instruction effects	5	0.67
Student effects	10	0.90
<i>Composite scales</i>		
Transformation	22	0.95
Transaction	6	0.25
Effects	28	0.93

Table 3
Intercorrelations of Scales

	<i>Schoole</i>	<i>Teache</i>	<i>ProGINE</i>	<i>Stude</i>	<i>Charins</i>	<i>Intstim</i>
Schoole	1.00	.69	.68	.71	.28	.30
Teache	.69	1.00	.74	.82	.20	.20
ProGINE	.68	.74	1.00	.69	.25	.24
Stude	.71	.82	.69	1.00	.18	.20
Charins	.28	.20	.25	.18	1.00	.80
Intstim	.30	.20	.24	.20	.80	1.00
Indcon	.27	.27	.31	.21	.82	.71
Conrew	.21	.27	.31	.27	.65	.59
Manbex	-.21	-.04	-.08	-.12	-.44	-.51
Transfor	.30	.24	.29	.21	.98	.86
Transact	-.01	.20	.20	.12	.11	-.03
Effects	.85	.91	.87	.93	.24	.25

	<i>Indcon</i>	<i>Conrew</i>	<i>Manbex</i>	<i>Transfor</i>	<i>Transact</i>	<i>Effects</i>
Schoole	.27	.21	-.21	.30	-.01	.85
Teache	.27	.27	-.04	.24	.15	.91
ProGINE	.31	.31	-.08	.29	.20	.87
Stude	.21	.27	-.12	.21	.12	.93
Charins	.82	.65	-.44	.98	.11	.24
Intstim	.71	.59	-.51	.86	-.03	.25
Indcon	1.00	.69	-.35	.91	.18	.28
Conrew	.69	1.00	-.30	.69	.45	.28
Manbex	-.35	-.30	1.00	-.44	.73	-.15
Transfor	.91	.69	-.44	1.00	.12	.27
Transact	.18	.45	.73	.12	1.00	.11
Effects	.28	.28	-.15	.27	.11	1.00

Scales are abbreviated as follows: Schoole, School effects; Teache, Teacher effects; ProGINE, Program and Instruction effects; Stude, Student effects; Charins, Charisma/inspiration; Intstim, Intellectual stimulation; Indcon, Individual consideration; Conrew, Contingent reward; Manbex, Management-by-exception; Transfor, Transformation; Transact, Transaction; Effects, School outcomes in total.

principal factors extraction when oblimin rotation into two factors was specified by the researcher. Principal factors extraction was chosen because it is widely used and conforms to the factor analytic model in which common variance is analyzed with unique and error variance removed. The decision to use oblique rotation was made because it allows the factors to be correlated (Carroll, 1983). Table 4 gives the factor loadings and structure for the two-factor solution as well as the correlations among the factors.

The actual factors emerging from the two-factor solution presented in Table 4 readily confirm the transformational scale as factor one, which includes most of the items used for that constructed factor. Two items (8 and 10) loaded only, but negatively, on factor two. Five items (7, 9, 14, 15, 16) loaded positively on factor one and negatively on factor two, and only one item (1) loaded weakly (< 0.3) on both factors. It is important to note that all three items defining the transactional construct of contingent reward loaded unequivocal-

Table 4
Factor Loadings,* Eigenvalues, Percents of Variance, and Correlations Between Factors for
Principal Factors Extraction and Oblimin Rotation for Two Factor Solution for Leadership
Variables on School Survey Items

delta = 0 for oblique rotation	F1	F2
Eigenvalues	12.74	1.92
Percent Variance	45.5	6.8
Cumulative Percent Variance	45.5	52.4
<i>Leadership Items—2 Factor Solution</i>		
<i>Transformational Leadership</i>		
<i>Charisma/inspiration</i>		
1. Insists on only the best performance from us		
2. Has capacity to overcome any obstacle	.75	
3. Leads by doing than simply by telling	.64	
4. Commands respect from everyone	.73	
5. Symbolizes success within our profession	.84	
6. Excites us with visions	.64	
7. High expectations for us as professionals	.37	-.44
8. Will not settle for second best in performance		-.47
9. Encourages us to be team players	.51	-.37
10. Less own needs more school objectives		-.31
11. Makes us feel/act like leaders	.82	
12. Provides good models to follow	.88	
13. Gives sense of overall purpose	.83	
<i>Intellectual stimulation</i>		
14. Challenges us to reexamine assumptions	.31	-.41
15. Prompts us to think about what we are doing	.54	-.41
16. Stimulates us to rethink the way we do things	.46	-.51
<i>Individual consideration</i>		
17. Facilitates support from external personnel	.60	
18. Compliments when we do outstanding work	.75	
19. Provides training for relevant skills	.59	
20. Treats us as individuals with unique needs	.70	
21. Thoughtful of our personal needs	.75	
22. Provides special recognition for good work	.79	
<i>Transactional Leadership</i>		
<i>Contingent reward</i>		
23. Assures us we can get what we want for effort	.37	
24. Provides relevant information	.52	
25. Helps us get what we decide we want	.71	
<i>Management-by-exception</i>		
26. Asks only of us what is essential to get work done		.67
27. Satisfied with performance if old ways work		.67
28. No change if going all right		.60
<i>Correlations between factors</i>		
	F1	F2
Factor 1	1.00	
Factor 2	-.57	1.00

*Only factor loadings > 0.30 are given

ly on factor one. This results in the constructed transactional scale being empirically defined by items 26, 27 and 28. Eigenvalues and percent variance indicate that together these two factors account for half the variance that exists in the items defining the factors with the first factor making the substantial contribution. The two-factor solution is supported strongly by the empirical data, but the characteristics of these two factors do not conform to Bass's hypothesized relationships.

Canonical Correlation

The results for the testing of successive latent roots in the canonical correlation analysis of the survey data comprising five predictor variables and four criterion variables are presented in Table 5. From the analysis reported in the table, it is clear that the first two canonical correlations are almost certainly significant even if allowance could be made for the fact that the schools do not form a simple random sample. Thus the predictor variables are related to the criterion measures in two significant ways.

Table 6 records the transformation weights and the structure coefficients for the two sets of variates related by significant canonical correlations. The transformation weights and the structure coefficients recorded in Table 6 also cannot be tested for statistical significance, but a conventional guide would be to consider only those structure coefficients in excess of 0.30 as being of sufficient magnitude to be worthy of consideration. Likewise, transformation weights equal and less than 0.20 are regarded as trivial and not of sufficient size to warrant consideration. Generally, transformation weights in excess of 0.10 are associated with more than 1% of variance explained.

According to Keeves (1986) although both transformation weights and structure coefficients are useful, experience in interpreting canonical factors has shown that a more meaningful view is frequently obtained from examining the structure coefficients when interpreting relationships between the original variables and the derived canonical variates. Tatsuoka (1973) makes this clear in the following comment:

That this is a more reasonable approach in attempting to *interpret* the canonical factors (as against assessing the relative contribution of each original variable to the factors) becomes obvious when we recall that the standardized weights (canonical or discriminant) are partial coefficients with the effects of other variables removed or controlled. This is fine when the purpose is to gauge the

Table 5
Canonical Correlations Between Predictors and Criteria

No. of roots removed	Canonical R	R ²	Approx F	df	P
0	.33	.11	3.07	20	<.001
1	.28	.08	2.63	12	<.019
2	.18	.03	1.78	6	NS
3	.10	.01	1.22	2	NS

NS = Not Significant

Table 6
Transformation Weights and Structure Coefficients for Canonical Analysis
Between Predictors and Criteria

<i>Predictor measures</i>	<i>Transformation weights^a</i>		<i>Structure Coefficients^b</i>	
	<i>U₁(TF)</i>	<i>U₂(TA)</i>	<i>U₁(TF)</i>	<i>U₂(TA)</i>
Charisma/inspiration	-.20	-.60	<u>.80</u>	<u>-.37</u>
Intellectual stimulation	<u>.32</u>	<u>-.36</u>	<u>.82</u>	<u>-.43</u>
Individual consideration	<u>.59</u>	.18	<u>.93</u>	-.11
Contingent reward	<u>.41</u>	<u>.95</u>	<u>.87</u>	<u>.32</u>
Management-by-exception	-.01	<u>.53</u>	<u>-.41</u>	<u>.64</u>
Variance extracted			.62	.17
Criterion measures	V ₁	V ₂	V ₁	V ₂
School effects	<u>.35</u>	<u>-1.32</u>	<u>.83</u>	<u>-.49</u>
Teacher effects	.04	<u>.23</u>	.04	<u>.46</u>
Program and instruction	<u>.74</u>	<u>.65</u>	<u>.97</u>	.21
Student effects	-.01	<u>.61</u>	<u>.76</u>	.17
Variance extracted			.55	.13
Canonical R			.33	.28
Canonical R ²			.11	.08
Redundancy			.06	.01

^aTransformation weights > 0.20 are underlined

^bStructural coefficients > 0.30 are underlined

contribution of each variable in the company of others, but is inappropriate when we wish to give substantive interpretations. (p. 280)

The relationship between the original observed variables and the first pair of canonical variates may be seen from an examination of the first set of structure coefficients for the criterion variables. The first canonical criterion factor is related to, largely, program and instruction effects, school effects, and student effects. The second canonical criterion variate is positively concerned with teacher effects and negatively with school effects.

Table 6 also presents the proportion of variance extracted from the criterion and the predictor sets of variables by the two pairs of significant canonical variates, as well as the canonical correlations and the redundancy of the variance of the criteria, given the predictors. The first canonical variate has associated with it 55% of the variance of the criterion measures, and 6% of this criterion variance is explained by the predictor variables through this first canonical variate. The second canonical variate has associated with it only 13% of the variance of the criterion measures. Furthermore, less than 1% of this criterion variance is accounted for by the predictor variables through the second canonical variate. Although the two canonical variates extract over 79% of the variance from the predictor set, the canonical correlations are only moderate and reveal only a moderate leadership effect on outcomes. However, they represent a significant association that is meaningful for the model being tested and that provides considerable understanding of the interrelations between the two sets of measures.

To gauge the contribution of the predictor variables to the latent variate, transformation weights are used. The first predictor canonical variate is re-

lated to several leadership variables. It has a small negative weight for charisma/inspiration and larger positive weights for intellectual stimulation, individual consideration, and contingent reward. These results indicate that after controlling for the other characteristics, charisma/inspiration contributes negatively to forming the latent transformational variate ($-.20$). However, the structure coefficient ($.80$) indicates that charisma/inspiration is strongly related to the latent transformational variate once formed. In the school context, charisma/inspiration appears not to be important in contributing to the construct of transformational leadership, although, once leadership is identified as transformational it is strongly related to charisma/inspiration. The first criterion canonical variate has the largest structure coefficients for program and instruction effects and school effects and a strong loading on student effects. The analysis shows that the first pair of canonical variates involves transformational leadership. The variates are moderately correlated with each other ($R_c=.33$) and involve contingent reward insofar as it relates to transformational leadership.

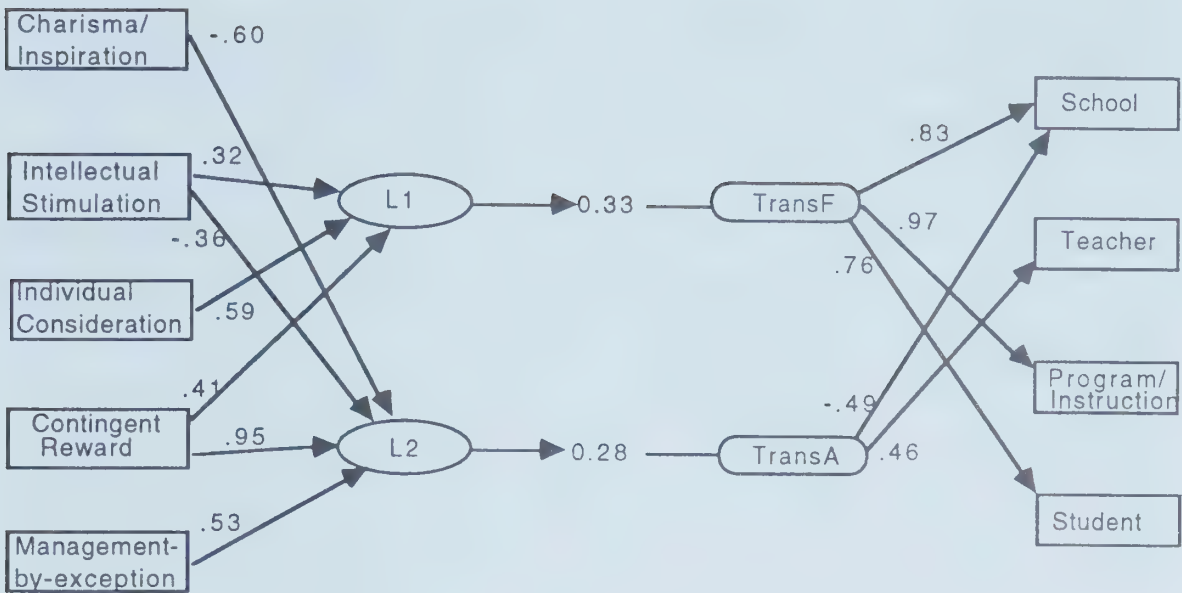
The second pair of canonical variates are also moderately correlated with each other ($R_c=.28$) and relate to transactional leadership. An examination of the structure coefficients shows that the criterion variate is largely and positively associated with teacher effects, while the predictor variate links strongly with management-by-exception and more moderately with contingent reward. However, in the formation of the second predictor canonical variate, after its effects on the formation of the transformation leadership variate have been partialled out, contingent reward has a large transformation weight of $.95$ relative to the weight of management-by-exception of $.53$. Two of the transformational measures (charisma/inspiration and intellectual stimulation) are also related moderately but negatively with the second predictor variate.

Figure 1 gives the path diagram for this canonical correlation analysis following an approach advanced by Van de Geer (1971) and presented in Keeves (1975). The five predictor variables give rise to two latent leadership variables L_1 and L_2 concerned with transformational and transactional leadership respectively. The path coefficients are given by the transformation weights and only path coefficients greater than 0.20 are shown in the figure. The latent variables determine in part the latent transformational variate (TransF) and the latent transactional variate (TransA) with path coefficients equal to the canonical correlations.

In the calculation of the causal paths between the latent transformational and transactional variates and the criterion measures of school outcomes, the structure coefficients are employed. Only those paths whose structure coefficients exceed 0.30 have been recorded in Figure 1. The latent transformational variate determines teacher perceptions of program and instruction effects, school effects and student effects, but is unrelated to teacher effects. The latent transactional variate influences school effects negatively and teacher effects positively. Thus the favorable influence on teacher effects is contrasted with an unfavorable influence on school effects.

Discussion

According to Bass (1985), transactional leadership relies on an exchange relationship between leader and followers, while transformational leadership sets



Only path coefficients $p > 0.20$ and structural coefficients $f > 0.30$ are presented in the figure.

Figure 1. Path diagram for canonical correlation analysis of leadership influence on school outcomes model.

aside the self-centered interests of the followers to bring about enhanced performances and change. Examination of the relationship between the dependent and independent variables using canonical regression indicates that the strongest relationship between the two sets of variables involves a transformational leadership construct defined by intellectual stimulation, individual consideration, and contingent reward. Such an outcome is contrary to a model that attempts to differentiate between transformational and transactional leadership in terms of exchange theory, insofar as contingent reward is not uniquely related to either transformational or transactional leadership. However, after the effects of contingent reward that influence transformational leadership have been removed, the residual strongly influences transactional leadership.

Factor analysis of the survey data in this study indicated that contingent reward and management-by-exception do not combine to form the construct of transactional leadership. Contingent reward correlates more strongly with each of the transformational factors than management-by-exception. Management-by-exception correlates negatively with all other variables. The operational and conceptual problems exhibited by the contingent reward scale hampers interpretation of the transactional construct and, to a lesser extent, the transformational construct.

Bass (1985; Bass & Avolio, 1988, 1990) clearly associates transactional leadership with managerial practices such as organizing, planning, and using rules and procedures, but these managerial elements are not used to operationally define transactional leadership. Although the source of the problems with the transactional scale may be a conceptual one, the low internal consistency of the composite scale indicates an operational problem, particularly when the defining factors demonstrate a satisfactory internal consistency.

Transformational and Transactional Constructs in Education

The transformational composite scale appears to provide a useful operational foundation for exploring leadership in education. There is support for the compelling argument that school leaders can promote change more successfully through employing methods associated with transformational leadership. The implication is that reliance on given procedures, rules, or reward systems is less effective. Personal dynamics, communication through ideas and example, and a perspective focusing on the group and collaboration positively influence school outcomes and facilitate school reform.

Burns (1978) has suggested that the dominant quality of transformational leadership is a developmental orientation toward followers. If school outcomes are best predicted by a developmental attitude toward followers, then a measure emphasizing individualized consideration and intellectual stimulation factors should be developed (Kirby, 1991), including the more elevating aspects of contingent reward. The correlations of individualized consideration, intellectual stimulation, and contingent reward with each of the school outcomes (Table 3) were for the most part higher than for charisma/inspiration, supporting such a refinement of this construct. Aspects of transformational leadership such as providing a model, employing collaborative problem solving, encouraging teacher development, and providing recognition and support may need to be emphasized because they appear to be more fundamental in the school setting. Nevertheless, it is evident that transformational leadership is a useful construct for educational leaders in their striving for educational reform.

In this study, transactional leadership did not prove to be as useful a component of educational leadership leading to change and improvement within schools. Although, as has been argued, this may be due to an inadequate definition of the transactional scale with an inappropriate emphasis on the exchange aspect. The results of this study support conclusions expressed by King (1989) with respect to the transactional construct. She suggested that the exchange relationship defining transactional leadership may become a component of transformational leadership when used in a

charismatic or inspirational manner. The intricacies of the individual exchange may determine whether or not it indicates transformational leadership. Extra effort in exchange for a promotion may characterize transactional leadership. However, extra effort in exchange for personal growth, increased self-esteem, or identification with a cause greater than oneself indicates transformational leadership. (pp. 160-161)

Additional insight into the possible nature of a transactional scale can be derived from the canonical regression analysis and the strong but negative correlations of management-by-exception with the transformational scales. Management-by-exception refers to a more passive style of leadership, one that may be seen as giving over more control to followers. The strong association of this variable with teacher effects implies that "less involved" leadership may enhance teacher outcomes although it may have a negative impact on school effects. Transactional leadership in education may include an aspect of leader uninvolvedness that may result in contradictory outcomes: empowerment of teachers at the expense of enhanced outcomes for the whole organiza-

tion. Such empowerment would not occur because of active leader behavior, but from leadership withdrawal, perhaps enacted in a climate of frustration and abandonment. As with the exchange relationship, the effects of leadership involvement may be context specific. It is not the presence or absence of involvement that defines leadership, but the nature of the involvement that determines whether it is transformational or transactional.

Usefulness of the Model for Explaining School Improvement Outcomes

Two latent variables were derived from canonical analysis of the survey data in this study. One was identified as transformational leadership and was primarily characterized by individual consideration, contingent reward, and intellectual stimulation. Charisma/inspiration was a marginal and negative contributor to this construct. This implies that the characteristics of leadership represented by charisma/inspiration do not discriminate between leaders within the school setting. Perhaps in the setting under survey too little variation exists in school leaders between their charisma/inspiration characteristics, or strong charismatic characteristics may not be present in sufficient numbers of school leaders, as has been implied (King, 1989; Kirby, 1991). Leadership characteristics defined by contingent reward related both to the transformational and transactional constructs. This implies that some aspects of the exchange relationship are of an elevated nature leading to higher levels of performance motivated by goals for the greater good. However, the nature of contingent reward is likely to be context specific and take on transactional characteristics at other times. The second latent variable derived from canonical analysis was identified as transactional leadership and was characterized by contingent reward and management-by-exception, as well as low measures on charisma/inspiration and intellectual stimulation.

These empirically derived constructs had the following effects: transformational leadership influenced all school outcomes except teacher effects; transactional leadership influenced teacher effects favorably and school effects unfavorably. It can be argued that in the school context, transformational leadership if defined by intellectual stimulation, individual consideration, and contingent reward influences a broad range of school outcomes that does *not* include teacher effects. The relationship of the transformational leadership construct to the charisma/inspiration variable is less clear. Although the variable is correlated with the construct, it does not contribute positively to its formation. Teacher effects are influenced by transactional leadership when it is defined as high on contingent reward and management-by-exception and low on intellectual stimulation and charisma/inspiration, as might be expected. The implication is that leadership impacts on teachers when school leaders are less involved, less concerned with goal setting and planning, and more exchange theory oriented. At the same time, however, such school leaders impact on the whole school negatively. When transactional leadership characteristics are more dominant, then teacher effects are enhanced and perception of school effects are depressed. To enhance teacher effects requires less involved and more passive leaders. Possibly such leaders allow teachers to take more responsibility (deliberately or by default) and experience a greater sense of control over their environment (although it does not lead to positively perceived school effects). Perhaps teacher power and control leads to en-

hanced teacher effects, whereas leader power and control enhances school, program and instruction, and student effects. It follows that shared power must broaden the impact of leadership on school outcomes. Perhaps transactional leadership conveys the idea of more teacher power, whereas transformational leadership conveys the idea of more leader power. In the current climate of teacher empowerment for school reform, these leadership constructs and these analyses indicate the problems involved.

Another important outcome of canonical analysis relates to the measure of redundancy in the criteria accounted for by the predictors. Only 6% of the variance in outcomes is explained by the predictors in the first pair of canonical variates, which represents the strongest (but moderate) association extracted from the data, and only a further 1% by the second pair. A total of only 7% of the variance in school outcomes is explained by the leadership variables. Although there is empirical support for meaning in the factors used and the way they are operating, there is a lot of unexplained variance in the two sets of variables. In the school setting, leadership defined in terms of transformational and transactional constructs is only a weak predictor of the educational outcomes examined. Data used in this study indicate that there may be more important constructs operating on educational outcomes than leadership as construed in Bass's model. It is possible that a redefinition of transformational and transactional leadership may increase the explanatory power of these concepts. Alternatively, more accurate measurement of the outcomes may lead to better explanations.

Recent research by Leithwood and Jantzi (1990) and Leithwood, Jantzi, Silins and Dart (1992) indicate that school leadership is mediated in its effects on school and student outcomes by in-school processes such as school goals, school culture, and teachers. Direct impact of leadership on school and student outcomes was found to be insignificant, whereas the mediated effect was quite significant. In these studies, a broader definition of transformational leadership (Podsakoff, Mackenzie, Moorman, & Fetter, 1990) was used than the one operationalized by Bass. However, there is evidence from this study to suggest that educational leadership has a significant indirect influence on school outcomes in the context of reform. More needs to be known about the mediators of leadership in general and transformational leadership in particular.

Conclusion

This study tested Bass's (1985; Bass & Avolio, 1988) model of transformational and transactional leadership applied to the school setting and found it provides support, in general, for a two-construct model. However, there is considerable overlap between the factors defining the two constructs so that their usefulness in explaining differences in school improvement outcomes is somewhat confounded. The transformational construct holds the most promise as a predictor of enhanced school outcomes. This construct appears to be a compendium of personal qualities of the leader that are not captured well by the charisma/inspiration factor, and leader behaviors represented by the factors of intellectual stimulation and individual consideration, as well as contingent reward. The transactional construct could be more useful in explaining leadership in education if redefined in terms of managerial and instructional tasks, together with teacher empowerment rather than exchange

theory. This is in line with the general discussion of differences between managers and leaders that has gone on for some time (Zaleznik, 1977) and the current teacher empowerment movement (Joyce, 1990).

Further research is needed to understand the behaviors that result in a leader being perceived as transformational in the school context. Operationalizing this construct in education more clearly will provide guidelines for leadership training and for orchestrating school restructuring. Leadership research in the school setting needs to investigate the implied contradictory nature of improving teacher and school effects. It seems likely that teachers should be important mediators of the impact of leadership in any school, so that models of leadership postulating direct influences on school outcomes are not as useful in educational settings. Regardless of the leadership constructs employed in studying school improvement, a more fundamental problem may exist if the model of leadership for school reform does not take into account processes within schools that operate to mediate the impact of school leadership on school outcomes.

Multivariate analysis of survey data has indicated that school leadership as presently construed may have little explanatory power for school outcomes. Bass's model assumes a direct effect of leadership on outcomes. It has been suggested that leadership operates indirectly to enhance school outcomes and that the mediated effect is stronger than the direct effect. Refining the transformational construct and increasing understanding of the indirect as well as the direct effects of leadership should help to explain the differences in outcomes of school improvement programs.

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Job Performance, Role Clarity, and Satisfaction Among Teacher Interns in the Edmonton Public School System

This article reports on the findings of a study that investigated the nature of the relationship between various indices of job satisfaction, role clarity, and job performance using the perceptions of a sample of teacher interns and their supervising teachers. The perceptions of teacher interns concerning job satisfaction and role clarity were determined using the Minnesota Satisfaction Questionnaire (MSQ) and a role clarity instrument developed along the lines of the Rizzo, House, and Lirtzman (1970) Role Ambiguity questionnaire, respectively. Job performance was determined from composite evaluations by dyads of supervisors and teacher interns. Generally, there was a high level of agreement between supervising teachers and interns concerning areas of lesser and greater performance. However, self ratings possessed less leniency than corresponding ratings by supervising teachers. Second, self appraisals showed significantly stronger correlations with both role clarity and job satisfaction than supervisor appraisals. Although perceptions of high levels of role clarity and job performance were reported in this study, the surveyed interns still reported experiencing lower levels of job satisfaction than the MSQ normative data for a comparable group. Finally, the findings of this study also provided tentative support for Herzberg's (Herzberg, Mausuer, & Snyderman, 1959) Hygiene theory.

Cet article présente les résultats d'une étude qui examinait la nature de la relation entre différents indices de la satisfaction au travail, de la clarté des rôles et de la performance au travail d'après les perceptions d'un nombre d'enseignant(e)s qui participaient à un programme d'internats et de leurs enseignant(e)s coopérant(e)s. Les perceptions des enseignant(e)s qui participaient à un programme d'internats concernant la satisfaction au travail et de la clarté des rôles ont été déterminé en utilisant l'instrument Minnesota Satisfaction Questionnaire (MSQ) et un instrument de clarté des rôles développé selon un questionnaire proposé par Rizzo, House et Lirtzman (1970). La performance au travail a été déterminée selon une évaluation composée par des superviseurs et des enseignant(e)s internes en relation dyadique. En général, il y avait un niveau élevé de la corrélation entre les perceptions des enseignant(e) superviseurs et internes dans les domaines de la performance. Cependant, l'autoévaluation présentait moins de satisfaction que l'évaluation correspondante par les enseignant(e)s superviseurs. Deuxièmement, l'évaluation de soi démontrait une corrélation plus significative entre les deux, la clarté des rôles et la satisfaction au travail, qu'avec les évaluations des superviseurs. Même s'il semblerait y avoir une autre corrélation entre la clarté des rôles et la performance au travail, un sondage effectué parmi les enseignant(e)s internes indique qu'il existe quand même un niveau inférieur de satisfaction au travail qu'indiqué sur les données normatives MSQ pour un groupe comparable. Enfin, les résultats de cette étude appuient tentativement la Théorie d'Hygiène de Herzberg (Herzberg, Mausuer, & Snyderman, 1959).

Introduction

This article reports on the findings of a study concerning the perceptions of teacher interns on three dimensions of their job, namely, job satisfaction, role

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clarity, and job performance. Specifically, the main purposes of this study were: (a) to determine whether teacher interns experienced role clarity and to identify the variables that contributed positively and negatively to perceptions of role clarity; (b) to assess levels of job performance of teacher interns using perceptions of both teacher interns and their supervising teachers; (c) to determine whether teacher interns experienced job satisfaction and to identify factors that influenced perceptions of job satisfaction; and (d) to explore and determine the nature of the relationships linking role clarity, job performance, and job satisfaction.

The Nature of the Alberta Initiation to Teaching (Internship) Project (ITP)

On April 22, 1985 the province of Alberta, Canada, announced the establishment of the Initiation to Teaching (Internship) Project (ITP), which was introduced on an initial two year experimental basis commencing September 1, 1985 and ending June 30, 1987. According to the ITP Guidelines (Alberta Education, 1985, p. 10) the main purpose of the project was "to provide for the continued professional training of graduates of the Faculties of Education in an environment that will facilitate the transition from student to professional teacher, as well as to provide employment opportunities for those graduates who may otherwise be unemployed." Only unemployed graduates were eligible for the ITP provided they had not graduated prior to 1983. The graduates were required to serve as interns for a period of one year during which they taught in cooperating schools under the close supervision of experienced teachers. During this period the interns received about half the salary of a beginning teacher, but were not assured of employment following the completion of their internship. In addition, the period served as an intern would not be considered for tenure, salary, or grading purposes.

Research on Role Ambiguity, Job Satisfaction, and Job Performance

Role ambiguity (obverse of role clarity) generally arises from discrepancy between job-related information that is made available to the worker and the ideal information required to assist the worker to adequately perform his/her role (Farber, 1983; Kahn, Wolfe, Quinn, & Snoek, 1964; and Rizzo, House, & Lirtzman, 1970). The lack or absence of clarity concerning job-related information was attributed by Kahn et al. (1964) to organizational complexity, rate of organizational change, and managerial philosophy.

Job satisfaction, which is defined by Locke (1976, p. 1342) as a "pleasurable emotional state resulting from the perception of one's job as fulfilling or allowing the fulfillment of one's important job values," is generally viewed as an outcome of performance and not a determinant of employee productivity. Several studies, including those by Friesen, Holdaway, and Rice (1983); Holdaway (1978); Miskel (1982); and Wickstrom (1973), have focused on the determinants of job satisfaction and their implications for career development of educational personnel. Thus recognition, responsibility, sense of achievement, the work itself, and good interpersonal relationships with students were found to improve sources of satisfaction for teachers, while rapport with administrators was strongly associated with overall career satisfaction. But for the majority of teachers, Lortie (1969) and Sergiovanni (1967) found that promotion opportunities did not motivate or provide job satisfaction, while

Holdaway (1978) and Schmidt (1976) found achievement, recognition, and advancement (promotion) as the main source of job satisfaction among those teachers who aspired to be administrators. The main source of job satisfaction for school administrators included achievement, responsibility, and autonomy (Friesen, Holdaway, & Rice, 1983) while professional satisfaction for beginning teachers was reported by Hewitson (1975) to be strongly associated with higher levels of supervision and decisional involvement.

Job satisfaction is important in education as it is closely associated with teacher turnover and absenteeism. School systems stand to lose substantially in terms of productivity, low morale, and financially by having dissatisfied teachers in their staff because these teachers are less productive, less positive, and are often not available to provide continuity of instruction.

The third research variable, job performance, is seen by Van de Ven and Ferry (1980, p. 82) as a value judgment that reflects the criteria used to judge how well people or organizations achieve their operating objectives. French, Kass, and Rosenzweig (1985) identified three basic variables that affect performance as ability, effort, and opportunity. These variables are in turn dependent on several factors. For example, effort is a function of needs, goals, expectations, and rewards. Thus, if opportunity and ability are held constant, then performance will depend on effort in that lack of clarity concerning, say, needs, expectations, and goals may lead to low performance.

Several studies in educational psychology generally concur that role ambiguity is inversely related to job satisfaction. For example, Kahn et al. (1964) reported that "role ambiguity leads to increased emotional tension and to decreased satisfaction with one's job" (p. 85). Subsequent studies by Beehr (1976), Greene (1972), Greene and Organ (1973), and Keller (1975) provided further support to the findings of Kahn et al. Similarly, House and Rizzo (1972), McLean (1979), Miles (1976) and Rizzo et al. (1970) reported a dissatisfaction. However, research findings on the relationship between role ambiguity and job satisfaction have not always been supportive or conclusive. For example, studies by Hamner and Tosi (1974) and Tosi (1971) found no significant relationship between role ambiguity and job satisfaction, while Szilagyi (1977) reported that role ambiguity was "not always negatively related to job satisfaction" (p. 376). Accordingly, it was expected that the present study would help further explain and clarify the nature of this relationship.

Role ambiguity has also been reported to be inversely related to job performance. Studies by Smith (1957), Schwab and Iwanicki (1982), Kahn et al. (1964), Cherniss (1980) and Burke and Belcourt (1974), for example, have reported findings indicating that ambiguous conditions and expectations lead to significant reduction in productivity or effectiveness, directly or indirectly, due to burnout or stress, while studies by House and Rizzo (1972), Miles (1976), and later Comadema (1984) concur that role ambiguity is negatively related to job performance. Evidence has also been reported by Beehr, Walsh, and Taber (1976) linking role ambiguity to reduced levels of employee participation and job involvement. However, a thorough analysis of literature reviews carried out by Lawler and Porter (1967) concluded that job performance was also directly related to job satisfaction.

Conceptual Framework

The conceptual framework proposed for this study constitutes a working model only and was used as a basis for defining the research problem and subproblems and the development of the research methodology including data collection procedures. It was developed from a synthesis of the various relationships between the major research variables reported in the literature. The framework consists of three major research variables: job satisfaction, role ambiguity, and job performance.

A search of existing literature on the nature of the relationship between job satisfaction and performance reveals three general conceptualizations explaining this relationship (Locke, 1970; Schwab & Cummings, 1970). The first formulation is that job satisfaction leads to job performance, while the second, which generally concurs with the former, further asserts that this relationship is moderated by intervening variables. The third and more widely accepted formulation stipulates that job satisfaction is both a result of, and dependent on, good performance and not vice versa (Lawler & Porter, 1967; Pigge & Lovett 1985; and Siegel & Bowen, 1971). This conceptualization of the performance-satisfaction relationship constitutes one dimension of the proposed conceptual framework of this study.

The second dimension links role ambiguity directly to job satisfaction indicating that role ambiguity is an intrinsic cause of job satisfaction as reported by Comadema (1984), House and Rizzo (1972), Miles (1976), and Rizzo et al. (1970). However, Cohen (1959), Kahn et al. (1964), and Smith (1957) also reported that role ambiguity is directly related to job performance. The link between role ambiguity and job performance, therefore, constitutes the third and final dimension of the proposed conceptual framework for this study.

The conceptual frame may help explain why, for example, insufficient information (that is, role ambiguity) about a focal position may lead to poor job performance or low productivity, which in turn may lead to job dissatisfaction. The proposed conceptual framework also further helps to explain why a person experiencing role ambiguity may be intrinsically dissatisfied with the job. To this end, role ambiguity is a predictor variable for both job performance and job satisfaction. Similarly, job performance, which is also an intrinsic cause of job satisfaction, is a predictor variable of job satisfaction.

Sample

Fifty interns and their supervising teachers were randomly selected from a population of 150 interns employed in the Edmonton Public School system. All the respondents were contacted by telephone regarding their possible participation in the study. Participation was in dyadic pairs so that if one member of a pair declined to participate in the study, the other member of that pair would automatically be dropped. Seven interns and/or supervising teachers declined, while three interns later quit the internship program before data collection was completed. Accordingly, the final research sample was made up of 54 elementary and 26 high school teacher interns and their corresponding supervising teachers. All the respondents were asked to sign a release form assuring them of the anonymity, confidentiality, and the non-

evaluative nature of the research as well as the right to withdraw from the study at any point during the investigation.

Instrumentation

Three questionnaires were used to elicit respondents' perceptions concerning the three major research variables: role clarity, job performance, and job satisfaction. Teacher interns were required to answer all questionnaires, whereas supervising teachers answered only a 30-item job performance questionnaire identical to the one administered to teacher interns.

The questionnaire on role clarity (Appendix A) consisted of 16 items. This instrument was developed by the researcher using literature on role ambiguity, in particular the Rizzo et al. (1970) Role Questionnaire. All the items were structured on a six-point Likert scale and the respondents were requested to indicate the extent to which certain conditions existed in their job using the six-point scale of Always (6), Frequently (5), Sometimes (4), Occasionally (3), Rarely (2), and Never (1). Typical examples of items on the questionnaire were "I am certain about my responsibilities," "I know exactly how much authority I have," and "I receive feedback on how I do my work."

Items on the job performance questionnaire (Appendix B) administered to teacher interns and supervising teachers were identically worded. The 30 items on this questionnaire were structured on a five-point (1-5) Likert-like scale by the researcher after consulting several instruments used in the Edmonton Public School system and the University of Alberta's Faculty of Education to evaluate teacher interns and student teachers respectively. In addition, literature on teacher effectiveness and evaluation was consulted and greatly assisted in constructing the questionnaire. The 5-point performance rating scale used was calibrated as follows: 1 (poor), 2 (fair), 3 (good), 4 (very good), and 5 (exceptional). Means and standard deviations were also computed for responses to this questionnaire.

Both job performance and role clarity questionnaires were pilot tested using a sample of former teacher interns who had come out of the same program the previous year. Reliability coefficients of 0.89 and 0.81 for role clarity and job performance were obtained using split-half correlational analysis. Validity of the instruments was based on face validity with the concurrence of several experienced researchers.

The Minnesota Satisfaction Questionnaire (Long Form) developed by Weiss, Dawis, England, and Lofquist (1967) was used to collect data on job satisfaction of teacher interns. Permission was sought and granted by the Vocational Psychology Research Center of the University of Minnesota, and 50 copies of the instrument were purchased for use in the study.

Procedure

The major reason for using the questionnaire approach in this study was the anonymity afforded to respondents. According to Mouly (1981), this approach allows the respondents to express their views anonymously, views that may otherwise be opposed or influenced by others or by researcher bias. This was an important consideration in this study because the researcher did not want the interns' ratings of their performance to be influenced by their supervisors. However, a semistructured interview schedule was also used to complement

the questionnaire and provide multiple perspectives and also to allow for deeper understanding of the variables under investigation.

All questionnaires were hand delivered in order to boost the rate of return and also to give the researcher the opportunity to establish rapport with respondents and further explain the purpose of the study. The respondents were asked to complete the questionnaires and mail them separately to the researcher using stamped and self-addressed envelopes provided by the researcher.

Research Findings

Question 1 : Extent of Role Clarity Experienced by Teacher Interns

For each of the 16 tasks, means and standard deviations were computed based on the responses of teacher interns. Table 1 contains a list of the 16 tasks ranked according to levels of perceived clarity. In addition, Table 1 also shows the proportion of interns who responded in each of the four categories on the rating scale. Of the 16 tasks, six were classified Role Expectations (RE), eight as Role Responsibilities (RR), and two as Performance Feedback (PF).

The profile of responses reflected in Table 1 clearly shows that there was general consensus among the respondents indicating that they experienced role clarity concerning their job. The overall modal response for the 16 items was "always." Sixty-six percent of the interview sample reported that they found their roles always clear compared with 17% who said their roles were "frequently" clear, 9% who reported that their roles were "sometimes" clear, and 8% who "rarely" found their roles clear:

An examination of Table 1 shows that of the eight highest rated tasks according to level of perceived clarity, two were in the area of Role Expectations while six were classified as Role Responsibilities. Of the bottom eight tasks, two were Role Responsibilities, two were Performance Feedback, and four were Role Expectations. This shows that the areas that contributed most to role clarity were those concerned with Role Responsibilities of teacher interns, which constituted six out of the eight highest rated clarity items followed by items on Role Expectations, while those on Performance Feedback contributed least to role clarity.

Interview data that generally corroborated questionnaire data provided more insight into the perceptions of respondents concerning performance feedback. The interviewed interns expressed concern and anxiety over lack of supervisory feedback. The general feeling among these interviewees was that although they were supervised or observed in class, they were otherwise not provided with feedback following these class visits. For example, one female elementary intern who summed up the general feeling among her colleagues complained that although her supervisor often sat in her class, "She doesn't tell me at the end of the lesson how I was doing. I don't even know for sure how she feels about my teaching."

The prominence of feedback as a possible source of role ambiguity highlighted in this study is supported by studies by Kahn et al. (1964) and Rizzo et al. (1970) who first identified uncertainty about the consequences or responses of others to one's behavior as an indication of role ambiguity. Subsequent studies by Pigge and Lovett (1985) and Walsh, Taber, and Beehr (1980) further revealed that performance feedback was not only a source of role ambiguity,

Table 1
Perceptions of Teacher Interns Ranked According to Mean Ratings of Extent to which they Experienced Role Clarity on 16 Dimensions (N=40)

Rank	Category*	Mean	Tasks	Rarely	Sometimes	Frequently	Always
1	RE	3.725	I know exactly where to go for help				
			Frequency	2	2	1	35
			Percentage	5.0	5.0	2.5	87.5
2	RR	3.650	I have clear goals and objectives for my work				
			Frequency	2	2	4	32
			Percentage	5.0	5.0	10.0	80.0
3	RR	3.625	I am certain about my responsibilities				
			Frequency	1	4	4	31
			Percentage	2.5	10.0	10.0	77.5
4	RR	3.600	Terms and conditions of service are clear				
			Frequency	2	4	2	32
			Percentage	5.0	10.0	5.0	80.0
5	RR	3.575	My rights and privileges are clear				
			Frequency	1	4	6	29
			Percentage	2.5	10.0	15.0	72.5
6	RR	3.550	I know how I am expected to work with colleagues				
			Frequency	3	3	3	31
			Percentage	7.5	7.5	7.5	77.5
7	RR	3.525	I know exactly how much authority I have				
			Frequency	2	5	3	30
			Percentage	5.0	12.5	7.5	75.0
8	RR	3.475	Clarity of school jurisdiction policies and regulations				
			Frequency	4	2	5	29
			Percentage	10.0	5.0	12.5	72.5
9	RE	3.425	I get clear and explicit directions and orders				
			Frequency	4	2	7	27
			Percentage	10.0	5.0	17.5	67.5
10	RR	3.400	I know who to report to				
			Frequency	2	5	8	25
			Percentage	5.0	12.5	20.0	62.5
11	RR	3.350	I do not ask others about what I am supposed to do				
			Frequency	2	5	10	23
			Percentage	5.0	12.5	25.0	57.5
12	RE	3.325	I get clear explanations of what to do				
			Frequency	1	6	12	21
			Percentage	2.5	15.0	30.0	52.5
13	RE	3.175	I am certain about the acceptability of my work				
			Frequency	5	2	14	19
			Percentage	12.5	5.0	35.0	47.5
14	RE	3.150	I am certain about how I will be evaluated				
			Frequency	5	3	13	19
			Percentage	12.5	7.5	32.5	47.5
15	PF	3.125	I receive feedback when I expect it				
			Frequency	7	2	10	21
			Percentage	17.5	5.0	25.0	52.5

Table 1 (continued)

Rank	Category*	Mean	Tasks	Rarely	Sometimes	Frequently	Always
16	PF	2.850	I receive feedback on how to do my work				
			Frequency	6	8	8	18
			Percentage	15.0	20.0	20.0	45.0
			Overall Frequency	49	59	110	422
			Overall Mean	3.063	3.688	6.875	16.475
			Overall Percentage	7.656	9.219	17.188	65.938

* Categories:
RE = Role Expectations
RR = Role Responsibilities
PF = Performance Feedback

but that it was also an important predictor of job satisfaction. Thus although the research sample in this study reported generally high levels of role clarity, great concern and anxiety generated by lack of feedback is an important finding that highlights the importance of performance feedback for both job performance and job satisfaction.

Self And Supervisor Assessed Performance

Question 2. Perceptions of Teacher Interns on the Effectiveness of their Performance. Self appraisals reported here are those job performance ratings that reflected the perceptions of teacher interns on how well they did on selected dimensions of their job, while supervisor appraisals are similar to ratings reflecting the perceptions of supervising teachers concerning the performance of the teacher interns on the same job dimensions. Means and standard deviations were computed for each of the 30 tasks based on the responses of teacher interns and their supervising teachers using a five-point rating scale ranging from 1 (poor), 2 (fair), 3 (good), 4 (very good), to 5 (exceptional). An overall mean score of 3.85 obtained indicates that on a five-point scale, teacher interns perceived their performance as a little more than just “good,” while supervising teachers rated the performance of interns at a mean score of 4.00, that is, “very good” on the same five-point scale.

Table 2 lists the top 10 tasks ranked according to perception of teacher interns concerning the extent to which they performed these tasks. Of the 10 highest rated tasks, eight were classified as “Human Relations” (HR), one as “Curriculum and Instruction” (CI), and one as “Personal Development” (PD).

Table 3 contains a list of the bottom 10 tasks according to the interns’ perceptions of the extent of their performance and shows that five areas were classified as “Curriculum and Instruction” (CI), three as “School-Community Relations” (SCR), and one each as “Personal Development” (PD) and “Human Relations” (HR).

It is evident from Table 2 that the 10 highest rated job performance tasks suggest that the greatest concern for the interns was establishing and maintaining good human relations. This high preference for human relations or ideographic dimensions of their job may well reflect the interns’ feelings of job security that influenced them to build positive relations with other members

of the school with the hope of improving their chances of being asked back the following year. This analysis is supported by interview data where the interview sample showed great concern for job security, especially because they were not assured of employment following the completion of the internship period. As one junior high school intern aptly put it: “I have to impress them, hoping to be asked back next year. It is therefore important to me to build good relations with them, some form of PR.”

Table 2
Top Ten Tasks Ranked According to Teacher Interns' Ratings of How Well They Thought They Were Performing Their Job (N=40)

Rank	Category*	Task	Mean
1	HR	Maintains good rapport with supervisors	4.28
2	HR	Shows empathy for students	4.25
3	HR	Maintains good rapport with colleagues	4.23
4	HR	Cooperates with colleagues	4.15
5	HR	Good leadership qualities	4.13
6	CI	Reinforcing students	4.10
7	HR	Student supervision	4.05
8	HR	Reflects and acts on supervisory advice	4.04
9	PD	Ability to make independent decisions	4.03
10	HR	Ability to make friendship with colleagues	3.98

*Categories:
HR = Human Relations
CI = Curriculum and Instruction
PD = Personal Development

Table 3
Bottom Ten Tasks Ranked According to Teacher Interns' Ratings of How Well They Thought They Were Performing Their Job (N=40)

Rank	Category*	Task	Mean
21	CI	Class management and control	3.63
22	SCR	Involves parents in learning of kids	3.61
23	CI	Deals with individual differences and needs of students	3.60
24	CI	Appropriateness of lesson introduction and closure	3.58
25	CI	Preparation of long and short term plans	3.53
26	PD	Student counseling	3.49
27	CI	Appropriateness of questioning techniques	3.40
28	HR	Participation in staff meetings	3.18
29	SCR	Holding parental conferences	3.12
30	SCR	Participation in community activities	2.76

*Categories:
CI = Curriculum and Instruction
SCR = School-Community Relations
PD = Personal Development

The teacher interns’ concern for the human relations dimension of their job is further revealed in Table 3 where only one of the 10 human relations-related tasks appears among the bottom rated 10 job performance tasks. Interestingly, Table 2 also shows that there were no tasks from the area of school community relations among the top 10 tasks ranked highest by teacher interns. All three school-community relations tasks were ranked among the bottom 10 tasks, with two of the tasks receiving the least performance effectiveness rating by teacher interns.

Question 3: Perceptions of Supervising Teachers on the Effectiveness of the Interns’ Performance.

The rating of supervising teachers concerning how well teacher interns were performing was rank ordered to determine areas of greater and lesser performance. The top 10 tasks that received highest rating scores by supervising teachers appear in Table 4. According to Table 4, eight of the 10 highest rated tasks were classified as Human Relations (HR), one as Curriculum and Instruction (CI), and the other as Personal Development (PD). No tasks in the area of School-Community Relations (SCR) appeared among the top 10 tasks.

The bottom 10 tasks ranked according to the supervising teachers’ perceptions of the performance effectiveness of teacher interns are listed in Table 5. Of the bottom 10 tasks, five were classified as Curriculum and Instruction (CI), three as School-Community Relations (SCR), and one each as Personal Development (PD) and Human Relations (HR). As in the case of the teacher interns’ bottom 10 tasks, only one task in the area of Human Relations appeared on the list.

Table 4
Top Ten Tasks According to Supervising Teachers’ Ratings of How Well They Thought Teachers Interns Were Performing Their Job (N=40)

Rank	Category*	Task	Mean
1	HR	Reflects and acts on supervisory advice	4.38
2	HR	Maintains good rapport with supervisors	4.33
3	HR	Maintains rapport with colleagues	4.31
4	HR	Shows empathy for students	4.25
5	HR	Good leadership qualities	4.23
6	HR	Consistence and fairness with students	4.22
7	HR	Cooperates with colleagues	4.21
8	HR	Ability to make friendship with colleagues	4.20
9	CI	Suitability of student activities	4.13
10	PD	Shows initiative	4.08

*Categories:
HR = Human Relations
CI = Curriculum and Instruction
PD = Personal Development

Table 5
Bottom Ten Tasks Ranked According to Supervising Teachers' Ratings of How Well They Thought Teacher Interns Were Performing Their Job (N=40)

Rank	Category*	Task	Mean
21	CI	Appropriateness of objectives	3.85
22	CI	Deals with individual differences and needs of students	3.80
23	CI	Appropriateness of lesson introduction closure	3.78
24	PD	Student counseling	3.77
25	SCR	Participation in community activities	3.74
26	CI	Class management and control	3.70
27	CI	Appropriateness of questioning techniques	3.65
28	SCR	Involves parents in learning of kids	3.62
29	HR	Participation in staff meetings	3.60
30	SCR	Holding parental conferences	3.50

Categories:
CI = Curriculum and Instruction
PD = Personal Development
SCR = School-Community Relations
HR = Human Relations

Question 4: Differences Between Teacher Interns' and Supervising Teachers' Perceptions Concerning Performance Effectiveness of Teacher Interns.

Ten tasks that received the highest mean ratings of performance effectiveness as rated by teacher interns were Human Relations (8), Curriculum and Instruction (1), and Personal Development (1). Similarly, the top 10 tasks, according to supervising teachers' ratings, were Human Relations (8), Curriculum and Instruction (1), and Personal Development (1). Of the top 10 tasks that received highest ratings on the two lists, seven tasks appeared on both the interns' and supervising teachers' lists. All the seven tasks were in the area of Human Relations. Although there were eight Human Relations, one Curriculum and Instruction, and one Personal Development task on both the interns' and supervising teachers' lists and that of the eight Human Relations tasks seven tasks were common to both lists, the tasks were ranked differently on the two lists.

The 10 tasks that received the lowest ratings of performance effectiveness by both groups show that nine of the tasks were the same on the two lists, although the rankings differed. However, the mean rating scores of supervising teachers were consistently higher than corresponding ratings of teacher interns on both the top 10 and bottom 10 tasks, indicating that supervising teachers felt that teacher interns were performing better than the interns themselves perceived.

Because there was a significant difference between the perceptions of teacher interns and their supervising teachers concerning the extent of the performance effectiveness of teacher interns, further analysis of the differences of the perceptions of the two groups in each task was conducted.

Those job dimensions for which differences between the perceptions of supervising teachers and teacher interns were statistically significant appear in Table 6.

According to Table 6, only five tasks produced statistically significant differences for paired means beyond the 0.05 level in a two-tailed test. Of these five tasks, two were among the bottom 10 and one was in the top 10 tasks according to both supervising teachers' and teacher interns' ratings. Three of the five task appearing in Table 6 were classified as "Human Relations" (HR) and one each as "School/Community Relations" (SCR) and "Personal Development" (PD). No "Curriculum and Instruction" (CI) task appeared among those that showed statistically significant differences in the extent of job performance as perceived by interns and their supervising teachers.

Generally, the supervising teachers' ratings of the extent of job performance of teacher interns were higher for all tasks rated than self ratings of teacher interns. This finding is at variance with most research studies including those by Ash (1980), Hubert and Dueck (1985), Johnston and Sackney (1982), Lawler and Porter (1967), Levin (1980), Meyer (1980), and Thornton (1968, 1980) that concur that self ratings are generally inflated compared with counterposition appraisals. Only Heneman's (1974) study, which found that six mean self ratings out of nine were lower than supervisor ratings, provides support for the current finding. Several explanations of why self ratings were less lenient than and correlated to supervisor ratings are suggested, including the uniqueness of the research setting and degree of familiarity with the rating scales used in the study.

Most studies on self appraisals have been carried out in noneducational settings where subordinate-superordinate relationships are quite pronounced and hence tend to create a threatening atmosphere in the evaluation process. Second, the ultimate use to which data from self appraisals is put may influence the objectivity of these ratings. A ratee may be readily persuaded to inflate self ratings in order to provide a more positive image that promotes

Table 6
A t-test Analysis of the Perceptions of Supervising Teachers and Teacher Interns Concerning Extent of Job Performance Effectiveness by Teacher Interns (N=80)

Category*	Task	t Value	p Value**
HR	Consistence and fairness with students	2.54	0.013
SCR	Participation in community activities	3.96	0.002
HR	Participation in staff meetings	2.10	0.043
HR	Reflects and acts on supervisory advice	2.30	0.024
PD	Ingenuity and innovativeness	2.00	0.045

* Category:
HR = Human Relations
SCR = School/Community Relations
PD = Personal Development
** Probability value based on 2-tailed test of significance

favorable administrative decisions if such data were eventually used to influence administrative decisions than if they were used for purely research purposes as was the case in this study. Heneman (1974), whose findings are also supported by the present study, attributed lower self appraisal scores to “the fact that ratings were obtained under conditions in which the ratings could be used only for research, as opposed to evaluation and decision making purposes” (p. 642).

Finally, familiarity with rating scales and their expectations may lead to more realistic self-assessments. According to Thornton (1980), a clearer understanding of the meaning of the concepts to be measured increases the accuracy of interpreting the rating scales, which in turn leads to greater objectivity of assessments. Thus because the rating scale used in this investigation (Appendix B) was developed after those used by the Faculties of Education for teaching practice supervision as well as those used by cooperating schools for teacher interns’ performance appraisals, teacher interns in this sample were likely to be familiar with the rating scale. Consequently, familiarity with and clearer conceptualization of the constructs and expectations of the rating scale by the research sample may have contributed to more realistic assessments as suggested by Thornton (1980).

Question 5: The Nature of Perceived Job Satisfaction of Teacher Interns and the Factors Contributing to Job Satisfaction.

The respondents’ mean scores on the 21 Minnesota Satisfaction Questionnaire (MSQ) scales were compared with those of the MSQ normative data for teachers and it was found that the mean scores of teacher interns were consistently lower than those of the norm group on all MSQ facets including overall job satisfaction. In order to measure the degree of association between the perceptions of the sample and norm groups, a Spearman r was computed for paired rank ordered means of the two groups. A very high Spearman $r_s = 0.86$ was obtained, indicating a strong positive relationship between the perceptions of the two groups. This was evidence that there was relative consistency in the rankings of the two groups, further indicating that the two groups held similar preferences for MSQ job satisfaction facets. However, the two groups differed substantially in their rating of the extent of perceived job satisfaction as indicated in Table 7, which lists ordered deviations of sample values around the norm means for all MSQ facets.

According to Table 7, the range of deviations of sample values around the norm means was -10.47 (maximum) and -0.23 (minimum). Areas of greater discrepancy between the scores of the two groups were Security (-10.47), Compensation (-9.58) and Advancement (-8.36), followed by Authority, Social Service and Social Status (-2.58 , -2.43 , and -1.96 respectively). When sample means were rank ordered, Achievement, Creativity, Moral Values, Co-workers, and Supervision-Human Relations emerged as areas of greater job satisfaction, while Security, Compensation, Advancement, Authority and Social Status were areas of least job satisfaction. This finding also provides tentative support for Herzberg’s Hygiene Theory because areas of greater and lesser satisfaction generally coincide with Herzberg’s motivational and hygiene factors respectively (Herzberg, Mausuer, & Snyderman, 1959).

Table 7
A Comparison of Mean Scores for Job Satisfaction of Teacher Interns with
Established MSQ Normative Data for Teachers (N=40)

<i>MSQ Job Facet</i>	<i>Sample Mean</i>	<i>Norm Mean</i>	<i>Deviation from Norm Mean</i>
Security	10.06	20.53	-10.47
Compensation	9.37	18.95	-9.58
Advancement	10.77	19.13	-8.36
Authority	16.37	18.95	-2.58
Social Service	19.65	20.08	-2.43
Social Status	16.82	18.78	-1.96
Creativity	19.90	21.83	-1.93
Working Condition	18.80	20.75	-1.87
Ability Utilization	19.25	21.08	-1.83
Recognition	17.65	19.46	-1.81
Variety	19.08	20.88	-1.80
Supervision-Human Relations	20.04	21.74	-1.70
Supervision-Technical	19.75	21.39	-1.64
Independence	18.88	20.52	-1.64
Co-workers	19.98	21.47	-1.49
Responsibility	19.48	20.90	-1.42
Activities	19.52	20.75	-1.23
Achievement	20.25	21.47	-1.22
Moral Values	20.23	21.42	-1.19
Company Policies and Practices	17.83	17.60	+0.23

Question 6. The Nature of the Relationship Between Role Clarity, Job Performance, and Job Satisfaction

Pearson product moment correlation analyses were computed to determine the nature of the relationships between self appraisals and supervisor appraisals with job satisfaction and that between role clarity with self and supervisor appraisals. All the correlation coefficients obtained for these relationships were positive, thus indicating the direction of the relationships. However, self appraisals produced larger and more statistically significant correlation coefficients ($p>0.05$) with both job satisfaction facets and role clarity dimensions than supervisor appraisals. This suggests that the relationships linking self appraisals to job satisfaction and role clarity were stronger than the corresponding relationships between supervisor appraisals and the latter variables. These results may indicate the degree to which the focal persons (teacher interns) valued their perceptions on job performance, which resulted in greater association between their perceptions with both job satisfaction and role clarity than the corresponding association between perceptions of supervising teachers with job satisfaction and role clarity. Thus the greater the importance or value attached to the perceptions, the stronger was the predictive relationship was between the predictor and criterion variables.

In order to determine the nature of the relationships linking self assessed performance, supervisor appraisals, role clarity, and job satisfaction and estab-

lish whether supervisor appraisals remained consistently weakly linked to the other research variables, a correlation matrix was computed for all four variables (Table 8). The results of the computation showed that supervisor appraisals failed to produce statistically significant coefficients of correlation with the other three research variables except for self appraisals. For these reasons, supervisor appraisals were left out of further analyses to determine the relationships linking role clarity, job performance, and job satisfaction.

At this point, the conceptual framework that was used to guide the study was utilized in interpreting the results of the correlation matrix concerning role clarity, job performance (self assessed), and job satisfaction. In order to explore further the relationships proposed in the conceptual framework, a partial correlation analysis was computed so that the indirect contributions of role clarity and self assessed performance to the proposed relationships linking the three research variables were established. The results of the partial correlation analysis showed that when role clarity was partialled out from both self assessed performance and job satisfaction, a partial correlation coefficient of 0.47 was obtained. This is only 0.085 smaller than the zero order correlation coefficient (0.555) between self assessed performance and job satisfaction. However, when self assessed performance was partialled out from the relationship between role clarity and job satisfaction, the correlation dramatically dropped from 0.388 to 0.19. This suggests that the relationship between role clarity and job satisfaction is mediated by self assessed performance.

The above findings provide support to the conceptual framework for this study, which proposed that role clarity (obverse of role ambiguity) is directly, but weakly, linked to job satisfaction as well as indirectly through job performance. However, the most significant finding of this study concerning the relationships linking the research variables was the emergence of self assessed performance as the mediating variable in the relationship between role clarity and job satisfaction. This finding further highlights the role played by self assessed performance in the role ambiguity-job performance-job satisfaction equation, a role that may have important implications to current teacher performance appraisal practices, which are dominated by supervisor appraisal systems.

Table 8
Pearson Product Moment Correlation Coefficients Matrix for Role Clarity, Self Appraisals, Supervisor Appraisals, and Job Satisfaction (N=80)

	<i>Role Clarity</i>	<i>Supervisor Appraisals</i>	<i>Self Appraisals</i>	<i>Job Satisfaction</i>
Role Clarity	1.000			
Supervisor Appraisals	0.193	1.00		
Self Appraisals	0.430*	0.403*	1.000	
Job Satisfaction	0.388*	0.230	0.555*	1.000

* value statistically significant at 0.05 level

Conclusions

Six major conclusions highlighting the findings of this study are enumerated below.

1. There was a high level of agreement between questionnaire and interview data indicating that overall the surveyed teacher interns generally experienced role clarity. Areas that contributed most to role clarity were concerned with "Role Responsibilities" while those concerned with "Performance Feedback" contributed least.
2. Teacher interns and their supervising teachers differed significantly in their perceptions of the extent of performance effectiveness of the interns over all 30 performance tasks. An examination of the mean ratings of the two groups over the 30 tasks showed that supervising teachers felt that teacher interns were performing more effectively than the interns perceived. The fact that the results of the study were to be used for research purposes only may have contributed to lower mean ratings of teacher interns.
3. The measures of association between the perceptions of supervising teachers and teacher interns concerning performance effectiveness were very high. The similarity in the ratings of the two groups may have been influenced by the fact that the groups were familiar with the rating scale used and that they had a clearer understanding of the meaning of the concepts to be measured, thus increasing the accuracy of interpreting the scale.
4. Teacher interns in this study experienced generally lower levels of job satisfaction, especially when compared with the Minnesota Satisfaction Questionnaire (MSQ) normative data for teachers. The nature of the program may have contributed to low feelings of job satisfaction among interns in that although they were fully qualified teachers in their own right, they did not enjoy the same conditions of service and other benefits as those enjoyed by other teachers.
5. There was a high measure of association between perceptions of the interns and norm group indicating that the two groups held similar preferences for MSQ job satisfaction facets.
6. The relationships between the research variables showed that self assessed performance was significantly linked to both role clarity and job satisfaction, while the relationships between supervisor assessed performance and the other variables were weak. In addition, self assessed performance mediated the relationship between role clarity and job satisfaction such that role clarity was linked directly, but weakly, to job satisfaction as well as indirectly via self assessed performance.

Implications

The findings of this study underline the importance of continued research concerning the concepts of self and supervisor assessed performance. Of particular importance is the role of self appraisals in relation to job satisfaction of teaching personnel. The close relationship between self appraisal and job satisfaction reported in this study raises the question of the utility of continued use of supervisor appraisals as the only teacher evaluation approach in education. The importance and value attached to self assessed performance as evidenced by the findings of this study suggests that educational administrators and educationists should explore further the possibility of making

greater use of self appraisal scales in education. Finally, areas of greater and lesser job satisfaction for teacher interns, as well as their perceptions concerning role clarity, provide an important source of information for developers of preservice programs and teacher internship in particular. The results suggest that job satisfaction may be greatly enhanced by restructuring and improving the nature of the job itself, while job dissatisfaction may be avoided by improving conditions of service of teachers. These two coincide with areas of perceived greater and lesser satisfaction as revealed by this study.

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Appendix A
Role Clarity Questionnaire Items

The role clarity questionnaire consisted of 16 items, which were rated using the following scale:

Always	Often	Frequently	Sometimes	Rarely	Never
6	5	4	3	2	1

- I am certain about my responsibilities
- I know exactly how much authority I have
- School and jurisdiction policies and regulations are clear to me
- I get clear and explicit directions and orders
- I am certain as to who to report to in my job
- I know exactly where to go for help
- I get clear explanations of what to do
- I know exactly how I am expected to relate to my colleagues
- I know whether my supervisors will find my work acceptable
- I have to ask others about what I am supposed to do
- I have clear goals and objectives for my work
- I am certain about how I will be evaluated
- I receive feedback on how I do my work
- I receive feedback when I do not expect it
- I know exactly what my rights and privileges are
- My terms and conditions of service have been made clear to me

Appendix B
Job Questionnaire Items

The job performance questionnaire consisted of 30 items which were rated by dyads of teacher interns and their supervising teachers using the following scale:

Poor	Fair	Good	Very Good	Exceptional
1	2	3	4	5
Preparation of long and short term plans				
Designing appropriate objectives				
Designing suitable student activities				
Keeping accurate records				
Cooperating with colleagues in lesson planning				
Reinforcing students (e.g., appropriate feedback, praise, and so on)				
Developing interesting and challenging learning activities				

Classroom management and control
Responding to needs, aptitudes and learning styles of students
Using a variety of appropriate questioning techniques
Suitability of learning materials, illustrations and examples
Appropriateness of lesson introduction and closure
Ingenuity and innovativeness
Showing empathy for students
Student counseling
Showing consistence and fairness in dealing with students
Encouraging and valuing parental involvement in student work
Holding parental conferences
Student supervision
Participation in community activities
Participation in staff meetings
Maintaining good rapport with colleagues
Showing initiativeness
Providing good leadership (e.g., dependable, punctual, and so on)
Assisting in extracurricular activities
Reflecting and acting upon supervisory suggestions
Ability to make independent decisions
Maintaining good rapport with superiors
Developing own teaching approaches
Ability to make friendship with colleagues

For Contributors

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